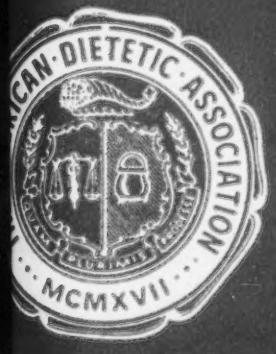
JULY 1956

VOLUME 32 | NUMBER 7

UNIVERSITY OF MICHIGAN
JUL 25 1956
HOSPITAL LIBRARY

Journal OF THE AMERICAN DIETETIC ASSOCIATION

PUBLISHED BY THE AMERICAN DIETETIC ASSOCIATION



Combating Food Misinformation — *Ruth L. Huenemann*

The Self-Styled Scientist — *Adelia M. Beeuwkes*

Nutritional Claims in Food Advertising — *Rita S. Rosenberg*

Sodium and Potassium in Fish — *J. R. McBride and Robert A. MacLeod*

Discoloration of Machine-Peeled Potatoes — *Karla Longrée*

Iron Content of Eggs — *Frances A. Johnston*

Nutritional Improvement of Rice — *Marinus C. Kik*

Imaginators at Work — *Clarice D. Gullickson*

Commercial Mixes vs. Conventional Formulas — *Monica R. Roller*

39th A.D.A. Annual Meeting Milwaukee October 9–12, 1956

*Heavy-duty MFB has found a way to put frying power in frying fat, and at the same time keep it plastic—not hard or crumbly.

Heavy-duty MFB handles easily. No need to have two kinds of fat when you use heavy-duty MFB with built-in frying power.

a pure all-hydrogenated all-vegetable shortening made by

THE WESSON OIL PEOPLE · New Orleans, La

VOLUME 32 · NUMBER 7

Journal OF THE AMERICAN DIETETIC ASSOCIATION

Contents, July 1956

COMBATING FOOD MISINFORMATION AND QUACKERY—*Ruth L. Huenemann*, D.Sc. 623

CHARACTERISTICS OF THE SELF-STYLED SCIENTIST—*Adelia M. Beeuwkes*. 627

NUTRITIONAL CLAIMS IN FOOD ADVERTISING—*Rita S. Rosenberg*, Ph.D.. 631

SODIUM AND POTASSIUM IN FISH FROM THE CANADIAN PACIFIC COAST—*J. R. McBride and Robert A. MacLeod*, Ph.D. 636

DISCOLORATION OF MACHINE-PEELED POTATOES—*Karla Longrée*, Ph.D. 639

IRON CONTENT OF EGGS—*Frances A. Johnston*, Ph.D. 644

NUTRITIONAL IMPROVEMENT OF RICE—*Marinus C. Kik*, Ph.D. 647

CURRENT COMMENT

Imaginators at Work—*Clarice D. Gullickson* 651

Comparisons of Products Made from Commercial Mixes and from Conventional Formulas—*Monica R. Roller* 654

BOOK REVIEWS 656

LETTERS TO THE EDITOR 657

CURRENT LITERATURE 658

ANNUAL MEETING GLIMMERS 668

NEWS NOTES 670

Journal of the American Dietetic Associ- is published monthly by The American tic Association, Mt. Royal & Guilford , Baltimore 2, Md., and 620 N. Michigan Chicago 11, Ill. Neither the Association he Editor assumes responsibility for the ons expressed by authors of papers ab- ed, quoted, or published in full in this al.

cription Rates: $6 per year in advance in S., Canada, and countries of the Postal ; all other countries, $7 per year in ad- . Special rate to undergraduate stu- and dietetic interns in approved in- ips, $2 per year in advance, if order is ved by head of the department. Single 75 cents in advance. All correspond- concerning Journal subscriptions, for copies or reprints from the Journal, notices of change of address should be to The American Dietetic Association, Royal & Guilford Aves., Baltimore 2, or preferably 620 No. Michigan Ave., go, 11, Ill. Notices regarding change of ss should reach the publisher by the *of the month before the date of issue* on the change is to take effect and both nd new addresses must be given. Claims ournals lost in the mail will not be enter- d more than six months after the date of sue involved.

rial Correspondence: All articles and es for publication, general correspond- , and inquiries should be sent to the r at The American Dietetic Associa- 620 N. Michigan Ave., Chicago 11, Ill. uscripts are accepted for publication on dition that they are contributed solely to Journal. Copy must be double-spaced two copies, an original and one carbon, mitted.

rtising: All correspondence concerning rtising should be addressed to The rican Dietetic Association, 620 No. igan Ave., Chicago 11, Ill.

YRIGHT, 1956, BY THE AMERICAN DIE- C ASSOCIATION. Printed in U.S.A.

ered as second-class matter June 30, 1925 e Post Office at Baltimore, Md. under act of August 24, 1912. Published thly by The American Dietetic Associa-

OFFICERS, 1955-1956, THE AMERICAN DIETETIC ASSOCIATION

Headquarters of the Association: 620 N. Michigan Ave., Chicago 11

Coordinating Cabinet

EXECUTIVE BOARD

President, MRS. WINIFRED H. ERICKSON, Ancker Hospital, St. Paul
President-Elect, LUCILLE M. REFSHAUGE, Hartford Hospital, Hartford 6, Conn.
Speaker of the House of Delegates, MARGUERITE L. PETTEE, Univ. of Colorado Medical School, Denver 20
Secretary and Chairman, Membership Committee, MARY ELLEN JOHNSON, Colorado State Hospital, Pueblo
Treasurer and Chairman, Finance Committee, DORIS JOHNSON, Ph.D., Grace-New Haven Community Hospital, New Haven 4, Conn.

SECTION CHAIRMEN

Community Nutrition, MARJORIE M. MORRISON, Florida Board of Health, Jacksonville 1
Diet Therapy, ELMIRA E. BLECHA, VA Hospital, Houston
Education, MRS. MARTHA NELSON LEWIS, The Ohio State Univ. Hospital, Columbus 10
Food Administration, BEATRICE DONALDSON, Ph.D., School of Home Economics, Univ. of Wisconsin, Madison 6

PUBLIC RELATIONS CHAIRMAN

ALICE L. CROMARTIE, Florida State Univ., Tallahassee

COUNCIL OF THE HOUSE OF DELEGATES

Speaker, MARGUERITE L. PETTEE, Univ. of Colorado Medical School, Denver 20
Speaker-Elect, ADELIA M. BEEUWKES, Univ. of Michigan, Ann Arbor
Delegates of the House of Delegates
BERTHA J. BILTZ, St. Luke's Hospital, Cleveland 1956
MAY S. REYNOLDS, Ph.D., Univ. of Wisconsin, Madison 6 ... 1956
RUTH S. DICKIE, Secy., Wisconsin Gen. Hospital, Madison 6. 1957
LEVELLE WOOD, The Ohio State Univ., Columbus 10 1957
Senior Delegates-at-Large
MILDRED BONNELL, Univ. of Illinois, Urbana 1956
MARGARET A. OHLSON, Ph.D., Michigan State Univ., East Lansing 1956
ERCEL S. EPPRIGHT, Ph.D., Iowa State Colleges, Ames 1957
HELEN A. HUNSCHER, Ph.D., Western Reserve Univ., Cleveland 6 1957

DELEGATES-AT-LARGE

BEULAH HUNZICKER, Presbyterian Hospital, Chicago 12 1958
C. FRANCES MACKINNON, Univ. of North Carolina, Chapel Hill 1958

Headquarters Staff

RUTH M. YAKEL, Executive Director
DOROTHY J. BATES, Organizational Liaison Director
MILDRED L. EGEBERG, Advertising and Exhibition Director
MRS. DOROTHY WEBER INYARD, Membership and Credentials Director
MRS. THELMA POLLEN, Public Relations Director
WILMA F. ROBINSON, Educational Director
J. HART ROSDAIL, Business Manager
MRS. DOROTHEA F. TURNER, Editor, JOURNAL
HARRIET E. SANKEY, Managing Editor, JOURNAL
CLARA ZEMPEL, State Activities Director and Program Coordinator

ADVISORY BOARD

FREDRICK J. STARE, M.D., Ph.D., *Chairman*—Harvard School of Public Health, Boston .....
GEORGE BUGBEE, Health Information Foundation, New York City .....
FRANK R. BRADLEY, M.D., Barnes Hospital, St. Louis ....

AWARDS, SCHOLARSHIP AND LOAN FUND BOARD

HELEN A. HUNSCHER, Ph.D., *Chairman*—Western Reserve Univ., Cleveland 6 .....

DIETETIC INTERNSHIP BOARD

MRS. CORINNE H. ROBINSON, *Chairman*—Drexel Institute of Technology, Philadelphia 4 .....

JOURNAL BOARD

MARGARET A. OHLSON, Ph.D., *Chairman*—Michigan State Univ., East Lansing .....
MRS. ELIZABETH CASO, Dept. of Public Health, Cambridge, Mass. .....
MRS. CORINNE H. ROBINSON, Drexel Institute of Technology, Philadelphia 4 .....
JANE M. LEICHSENRING, Ph.D., Univ. of Minnesota, St. Paul .....
ROSEMARY L. LODDE, Veterans Administration, Washington 25, D. C. .....
RUTH L. HUENEMANN, D.Sc., Univ. of California, Berkeley .....
PEARL J. ALDRICH, Ph.D., Michigan State Univ., East Lansing .....
LORRAINE G. WENG, National Dairy Council, Chicago 2 ....
E. ALLIENE MOSSO, St. Luke's Hospital, New York 25 .....

COMMITTEE CHAIRMEN

Annual Meeting, DOROTHY BELKNAP, Milwaukee County Dispensary, Milwaukee; RUTH A. HUMBOLDT, 1510 Alice St., Wauwatosa 13, Wis.
Civil Defense, DOROTHY L. BOVEE, American National Red Cross, Washington, D. C.
Educational Exhibits, MARTHA J. MOFFIT, VA Hospital, Hines, Ill.
History of A. D. A., MRS. ANNA BOLLER BEACH, The Presbyterian Hospital, Chicago
History of Nutrition and Dietetics, E. NEIGE TODHUNTER, Ph.D., Univ. of Alabama, University
Library, ELIZABETH H. TUFT, Chicago Wesley Memorial Hospital, Chicago
Nominating, RUTH W. SPENCER, Veterans Administration, Washington 25, D. C.
Program Planning, MARTHA J. MOFFIT, VA Hospital, Hines, Ill.; FRANCES L. LOW, Methodist Hospital, Houston
Career Guidance, SOPHIA M. PODGORSKI, Pennsylvania Dept. of Health, Wilkes-Barre

PRESIDENTS OF STATE DIETETIC ASSOCIATIONS AFFILIATED WITH THE AMERICAN DIETETIC ASSOCIATION

ALABAMA: Mrs. Jeannine T. Brown, Rt. #2, Box 488, Birmingham 9
ARIZONA: Mrs. Betty F. Neal, Arizona Public Service, Phoenix
ARKANSAS: Mrs. Mildred R. Darnell, VA Hospital, Little Rock
CALIFORNIA: Maxine Merrick, VA Hospital, Fresno
COLORADO: Evelyn I. Sperling, Colorado College, Colorado Springs
CONNECTICUT: Elna E. Daniels, Univ. of Connecticut, Storrs
DELAWARE: Nona Bradford, 722 Marsh Rd., Carrcroft-Wilmington
DISTRICT OF COLUMBIA: Edith A. Jones, Clinical Center, National Institutes of Health, Bethesda 14, Md.
FLORIDA: Pearl Laffitte, 5047 Birkenhead Rd., Jacksonville 10
GEORGIA: Millicent J. Martin, Georgia Dept. of Education, Atlanta
IDAHO: Agnes E. Bahlert, Idaho State College, Pocatello
ILLINOIS: E. Evelyn Smith, Univ. of Illinois, Urbana
INDIANA: Martha F. McBride, Indiana Univ., Bloomington
IOWA: Mary M. Meis, 1201—6th Ave., S.E., Cedar Rapids
KANSAS: Velma M. Knearl, VA Center, Wichita 8
KENTUCKY: Mrs. Anne M. Clemmons, Univ. of Kentucky, Lexington
LOUISIANA: Beth Andrews, Louisiana State Univ., Baton Rouge
MAINE: Charlotte S. Peirce, H. D. Goodall Memorial Hospital, Sanford
MARYLAND: Elaine L. Laursen, The Johns Hopkins Hospital, Baltimore 5
MASSACHUSETTS: Louise Hatch, Massachusetts General Hospital, Boston 14
MICHIGAN: Margaret L. King, Henry Ford Hospital, Detroit 2
MINNESOTA: Alberta M. Gurtler, Board of Public Welfare, St. Paul
MISSISSIPPI: Dr. Blanche Tansil, Univ. of Mississippi, University
MISSOURI: Helen McLachlan, St. Louis Univ. Hospitals, St. Louis
MONTANA: Eleanor Fredrickson, Galen, R. #1, Deer Lodge
NEBRASKA: Mrs. Virginia L. Tompkins, 2519 S. 53rd St., Lincoln
NEVADA: Mrs. Pauline P. Clark, 825 Stoker Ave., Reno
NEW HAMPSHIRE: Dr. Anna Light, Univ. of New Hampshire, Durham
NEW JERSEY: Mrs. Dorothy T. Eckert, 88 Highland Ave., Metuchen
NEW MEXICO: Ruth L. Titus, 1012-A Truman St., S.E., Albuquerque
NEW YORK: A. June Bricker, Metropolitan Life Insurance Co., New York City
NORTH CAROLINA: Elizabeth M. Kaiser, Duke Univ., Durham
NORTH DAKOTA: Sister Mary Martha Dickson, St. Alexius Hospital, Bismarck
OHIO: Margaret M. Walsh, Welfare Federation of Cleveland, Cleveland 15
OKLAHOMA: Betty A. Darcey, VA Hospital, Oklahoma City
OREGON: Ruth L. Mercer, Multnomah Hospital, Portland
PENNSYLVANIA: Mrs. Corinne H. Robinson, Drexel Institute of Technology, Philadelphia 4
RHODE ISLAND: Mrs. Doris E. Lewis, Rhode Island Hospital, Providence
SOUTH CAROLINA: Mattie M. Reavis, Anderson Memorial Hospital, Anderson
SOUTH DAKOTA: Sister M. Antoinette, O.S.B., St. Mary's Hospital, Pierre
TENNESSEE: Mrs. Flo J. Stephenson, 1629 E. Main St., Murfreesboro
TEXAS: Dr. Mina W. Lamb, Texas Technological College, Lubbock
UTAH: Mrs. Betty Cottle Bergman, Dairy Council of Utah, Salt Lake City
VERMONT: Helen I. Brown, Waterman Cafeteria, South Burlington
VIRGINIA: Kathryn E. Smith, Reynolds Metals Co., Richmond
WASHINGTON: Edna C. Messinger, Regents Hill Dormitory, Pullman
WEST VIRGINIA: Ann Louise File, Raleigh General Hospital, Beckley
WISCONSIN: Dagmar W. Tuomin, Milwaukee County Institutions, Milwaukee 1
WYOMING: D. Jean Golden, Ivinson Memorial Hospital, Laramie
HAWAII: Mrs. Virginia B. Cooksey, 1778 Glen Ave., Wahiawa

Combating Food Misinformation and Quackery[1]

RUTH L. HUENEMANN, D.Sc.

Associate Professor of Nutrition, School of Public Health, University of California, Berkeley

AT THE 38th Annual Meeting of The American Dietetic Association in St. Louis, the House of Delegates adopted, at the request of the California Dietetic Association, a resolution concerning the need for combating food and nutrition misinformation. This resolution reads as follows:

> WHEREAS, members of the California Dietetic Association as individuals and groups have expressed a need for guidance in ways to conduct a constructive program to combat food and nutrition misinformation; and
>
> WHEREAS, members of the California Dietetic Association feel that the Association should assume leadership in acquainting the public with sound nutrition information and with resources for obtaining it; be it therefore
>
> RESOLVED, that The American Dietetic Association should establish policies and procedures for guidance of state associations and of individual members so that they may develop similar constructive programs in their own areas; and be it further
>
> RESOLVED, that The American Dietetic Association should conduct a program to acquaint allied organizations and the public with sound food and nutrition information

Thus, it is apparent that a pressing need is felt for an aggressive program to combat food misinformation and quackery in the field of nutrition. This paper will, therefore, be concerned with possible methods which might be employed to this end. It will deal primarily with three aspects of the problem as I see it:

(a) Principles we may want to keep in mind in dealing with the food misinformation problem.

(b) Action that is being taken by our national and state dietetic associations.

(c) Other activities of which I have heard or thought might be feasible or necessary.

[1] Presented before the Sacramento Region of the California Home Economics and Dietetic Associations on March 13, 1956.

Definitions

In order that we might understand the problem, perhaps we should define a few terms.

"*Food misinformation*"—that which is not in line with scientific evidence to date. This may take the form of outright fallacies, fancies, or fads, which are often exaggerated half-truths and as such may be more difficult to combat than outright fallacies. Sometimes misinformation appears in the form of folklore; sometimes it is propounded by quacks.

"*Quack*"—a person pretending to a knowledge which he does not possess (in medicine, nutrition, or foods). Motivation of the quack usually is financial gain. He exists because food faddists exist.

"*Food faddist*"—one who follows certain food customs for a time with exaggerated zeal, such as enthusiasts for yoghurt, molasses, and so on.

(You will note at once that the faddists are by no means all in one camp. Perhaps we have all, on one occasion or another, been guilty of "exaggerated zeal" in regard to a particular nutrient or a particular food. For instance, when I was doing ascorbic acid research, I think it possible that I may have overemphasized its importance in my teaching. I wonder if during the war most of us didn't become rather unduly zealous about enriched bread. I point this out only to remind ourselves that the objective viewpoint to which we are all committed is sometimes extremely difficult to maintain.)

"*Food fads.*" There are many types of fads. Most popular, perhaps are the following four types:

(a) Those involving exaggeration of the virtue of a particular food or diet, e.g., fruits cure cancer.

(b) Those advocating omission of certain foods because of harmful properties ascribed to them, e.g., white bread is poisonous.

(c) Fads emphasizing "natural" foods, such as foods grown on soil treated with organic rather than chemical fertilizer or unprocessed foods. Such fads obviously exclude from the diet a large portion of our food supply and raise doubts in the minds of Americans about the integrity and purity of the nation's food supplies. Such doubts create a market for the quack's special products that sell for much more.

(d) Fads involving special devices, e.g., reducing diets.

You will note that all four types emphasize the *food* concept in contrast to the scientific *nutrient* concept, whereby nutrients, and not specific foods, perform certain physiologic functions. Science has shown us that individual foods are important primarily for their nutrient content. Since nutrients are widely distributed, it is possible to meet the body's nutrient needs by any of numerous combinations of foods. We even go so far as to say that there is no such thing as an "essential food"—there are only essential nutrients. This is obviously a more complex concept than one that permits you to eat celery for your liver, carrots for your eyes, and so on. We must be good teachers to make this understandable.

What Is Scientific Nutrition?

The above is one example of a difference between a false and a scientifically sound concept in nutrition. Fundamentally, what distinguishes fact from possible fallacy in nutrition? What is *science*, in contrast to folklore, fancy, or fad? *Science* is *organized, tested* knowledge. How is such knowledge achieved? Through four basic steps, known as the scientific or problem-solving method. They are:

(a) Defining or analyzing the problem, e.g., "What causes scurvy?" To get at this problem, one would need to define exactly what is meant by scurvy as distinct from other diseases—its onset, symptoms, duration, and so on. The next step is:

(b) Gathering data and formulating hypotheses. One would gather, if possible, all information already available about the disease: where does it occur, among what people, under what circumstances? What factors appear to be common to all these cases and in all these situations? On the basis of these, one would formulate some hypotheses. Our third step would then be:

(c) Testing the hypotheses under controlled conditions, that is, situations so controlled that we are testing only one variable at a time. Usually, in biologic research, this means the use of more than one subject. In fact, it usually means that a large number of subjects are needed to rule out other possible variables than that which we are testing. We have a right to be extremely suspicious of evidence based on one or two cases. Finally, the fourth step is:

(d) Applying the solution to a large number of cases. If it works, fine; if not, we start all over again.

By this process, that is, by the experimental method, scientific facts are established. Note that I did *not* say that scientific, i.e., organized, tested knowledge, fact is the only truth in the world, or that it is always complete truth. Folklore has in many instances been shown to be in line with scientific fact, e.g., Egyptians found that liver cured night blindness. In other instances, e.g., eating of heart for courage, folklore could not be substantiated as scientific fact. Thus our fight is not necessarily always between truth and falsehood, but between what has and has not been established as scientific fact. As scientists, we must often say, "There is no evidence that such and such is so," but not, "That is not true." Too many times we have had to eat our dogmatic statements; you all know the spinach story.

Our rebuttal to the quack, therefore, is the same question we must continue to ask ourselves, "What is your evidence?"

What Harm Does Food Misinformation Do?

Now that we have defined what we mean by scientific truth as compared to folklore, fads, fancies, or outright fallacies, we might well ask, "Does it matter, and if so, how much does it matter whether people listen to food quacks or believe falsehoods?"

We all know of instances in which people have been deprived of sound medical help by listening to the advice of some quack—cancer victims who thought they were being cured by a fad diet and who finally arrived at a doctor's office when it was too late; persons with diabetes who starved needlessly without the help of insulin, to mention but a few. We know also of people who have become bad cases of malnutrition by following one-sided, unbalanced diets to "cure" some real or fancied illness.

Then there are those who follow diets that may be nutritionally sound but are unnecessarily expensive since they include only *water-ground* grains, *unsulphured* dried fruit, *fertile* eggs, *raw* milk, and so on. In addition to upsetting the household economy, such diets breed needless and harmful distrust of our food industries.

Finally, all victims of unsound teaching are not being prepared to accept the newer findings of science as such become available. A scientific teacher of nutrition would hopefully teach an appreciation of the scientific method and thus prepare her pupils for newer knowledge.

Why Do Quacks Exist and Even Thrive?

Quacks would not thrive if they met no need. What needs do they meet?

(a) A need or at least a desire for information. The public has been alerted to nutrition, both by quacks and scientists, and they want to hear about it.

(b) They may meet a psychologic need for those who need a crutch to lean on for help with their organic or psychic ailments (sometimes called *real* vs. *imaginary* ills. I dislike this terminology, however, for non-physical ailments can be very real). I think we want to be aware of this fact in our dealing with food faddists, lest we go about breaking crutches without offering any alternate support.

Activities to Combat Misinformation

Keeping in mind what we have mentioned so far about what we mean by scientific nutrition vs. the

various kinds of food misinformation and the reasons for their persistence, let us go on to discuss activities to combat misinformation.

ACTIVITIES OF NATIONAL AND STATE ASSOCIATIONS AND AGENCIES

The American Dietetic Association and our state association have, in true scientific fashion, approached the problem by first of all attempting to analyze it. An American Dietetic Association committee has compiled fallacies and written up the facts opposing these listed fallacies. This committee report will be available shortly from The American Dietetic Association.

Our state committee on food information, with Dr. Jessie Obert of Los Angeles County Health Department as chairman, is trying to gather information about the nature and the extent of the problem here in California. She is eager to receive pamphlets or other printed matter with unsound information that is being disseminated and also announcements and accounts of activities of food quacks. All such material was used for an exhibit at our spring state dietetic meeting to alert all members to the nature and extent of the problem.

In my opinion it would be highly desirable to augment this beginning of an analysis of the problem with further study on who believes the quacks and why. We might learn things, technique-wise, that would be useful to us in trying to meet people's needs.

Another step taken by the California Dietetic Association was to pass a resolution that regional associations establish speakers' bureaus. A committee to formulate policies regarding this will be appointed by Maxine Merrick, our state president. Meanwhile, she is asking us to report to her what we have done in our regions about appointing such bureaus, and also what we want to establish by way of policies.

Another group that is encouraging action is our state inter-agency nutrition committee. A subcommittee has been appointed to see what we can do about stimulating formation of local nutrition committees. Such committees might serve as resource and coordinating bodies for action in regard to furthering the dissemination of sound nutrition information.

Several such committees have been formed—one in Los Angeles, which has even prepared a little leaflet. They aim toward having an executive secretary, I understand, with an office and telephone listing that would be a help to people who want either nutrition speakers or information. Santa Barbara also has a group, I believe, that is cooperating with the medical society.

APPROACHES IN PROGRAM PLANNING

Positive Approach. You will note that these activities aim to put the emphasis on a *positive* program toward disseminating sound nutrition information. This, I think, must be our approach. As I have previously implied, part of the reason for quackery and faddism is that we have left room for them to develop by not reaching the public with sound information. Sometimes this has been a matter of omission, and sometimes an error in commission, in that we have not reached the public effectively by the methods used.

In regard to omissions, it is true that we are all busy people and can't go about giving lectures continuously as if we were making our living by doing so. However, we might sometimes be more alert to the educational import of the work we are doing. Is every meal we serve in our hospitals a practical lesson in nutrition? Do our employees as well as our patients appreciate this fact? Do they know why the menus are planned as they are? As home economics teachers, do we and our students set a good example for the rest of the school in our eating practices? These are little things that might make a difference. Perhaps sometimes omissions are due to our underestimating the public's interest and ability to understand. We teach the simple facts about nutrient content of foods and the adequate diet (which are important and must be taught), but we say nothing about more involved matters, such as the cholesterol story, and thus leave a fine opening for quackery. Let's be a little more concerned about taking the public with us each step of the way as progress is made in the science of nutrition, even though these recent findings cannot be immediately translated into practical dietetics.

On the matter of reaching the public effectively, a great deal could and has been said. The field of communications is broad indeed and I think we would all admit that we could use help in this area. May I point out that in most communities there are resource people available to us—health educators with health departments, high school and college teachers in this field. You may be interested to know that a group in Los Angeles as part of the dietetic association's self-improvement plan has joined the Toastmistress Club to improve their speaking ability. Another activity suggested is seeing that the library has good nutrition books. (In that connection, may I mention one that is unique—Gerard's *Food for Life* [1].)

Preventive Approach. In large part a *positive* approach to the food misinformation problem is also *preventive* in nature. Once fad ideas are firmly entrenched and people are emotionally involved with their food practices, it is pretty late to effect a change. The time to reach people, as I have previously implied, is *before* the quack does. Ideally, nutrition education should begin in childhood. That is the best time to form correct eating practices. It is also the best time to begin to teach an appreciation of the scientific method. This can be done early in grade school. Certainly in our high school home economics classes we can teach students by the problem-

solving method and can teach them how to evaluate evidence. Unfortunately, many students even finish college without knowing how to read a scientific article. If we cannot weigh evidence, how can we tell scientific fact from falsehood?

Dealing Directly with Quacks and Faddists. Does our emphasis on the *positive, preventive* approach preclude all attempts to deal directly with quacks and faddists? No, not necessarily. I do not believe, however, that our major energies should go into this area. In cases of malpractice the quack can be legally apprehended. We have also, as I have mentioned, the right to ask him the same question we ask of ourselves and of each other, "What is your evidence?" Let us remember in dealing with him to do so on an intellectual basis and to beware of anger. Blind, unreasoning anger can cause one to make extravagant statements, and so become guilty of the same fault of which one is accusing the quack.

When it comes to changing the faddist, it would seem to me one would employ the same methods we use in attempting to change anyone's attitudes or practices. Since most of us resist change, this is never easy—and in some cases, virtually impossible. I feel that we should use a sympathetic, rather than a hammer-and-tongs approach, much as we deal with people of a culture different from our own. This means beginning where people are, trying to understand why they act as they do, commending what is right about their present practices, and then helping them decide to make needed changes. I would commend for all of us a reading of an article by Dr. George Foster in *California's Health*, "Working with People of Different Cultural Backgrounds" (2).

Summary

I have tried to define what we mean by scientific nutrition as compared with quackery and misinformation, point out that to a degree at least, faddism and quackery exist because scientific nutritionists have not always taken the lead in teaching the public, and that a positive, preventive approach is perhaps the most effective. I have mentioned activities that are being carried on by our various associations and by groups in different communities. I have *not* said what should be done by the specific home economics and dietetic groups, for only you can decide that.

Editor's Note: Presentation of this paper was followed by small-group discussions of ways in which the desire to combat quackery and food misinformation might be implemented. Dr. Huenemann reports the following as some of the suggestions which evolved from these buzz-groups:

(a) Contacting P.T.A. groups to learn whether a meeting on nutrition might be included in their schedule of programs.

(b) Working with local newspapers on nutrition fillers and articles.

(c) Working with local radio and television stations on nutrition programs.

(d) Having a library committee appointed to help the local librarian in the selection of nutrition materials.

(e) Organizing a refresher course in nutrition for homemakers with previous nutrition training, so that they might be prepared to teach community groups about recent developments in nutrition.

(f) Working with TOPS (Take Off Pounds Sensibly) and other civic groups on program planning to include nutrition content.

(g) Including a nutrition booth from the county at the State Fair exhibit.

(h) Preparing lists of visual aids in nutrition to be used by interested community groups.

REFERENCES

(1) Gerard, R. W., Block, R. J., Jolliffe, N., McCay, C. M., Smith, S. E., and Soskin, S.: Food for Life. (Gerard, R. W., ed.) Chicago: Univ. of Chicago Press, 1952.

(2) Foster, G. M.: Working with people of different cultural backgrounds. Calif. Health 13: 107 (Jan. 15), 1956.

Teachers—Good and Bad

Belittling students results not only in ineffective teaching, but causes the teacher to be disliked by the pupils, according to a report by Virginia W. Voeks of San Diego State College, San Diego, California.

In a survey of 1503 students, the results of which were published originally in the *American Journal of Physics*, belittling or the use of sarcasm or overt ridicule was cited as the primary reason for listing a teacher as "poor." Belittling tactics, the author reports, "may have more lamentable repercussions" than just causing a student to dislike a teacher. They may seriously impair the student's ability to understand the lecture material and they may kill a student's interest in pursuing further work.

A teacher may belittle because he or she may sense that explanations are not clear and lectures are not stimulating. As a consequence, the teacher turns to ridicule.

Concern was also expressed over teachers' voices. One-fourth of the teachers judged poor by the students were described as talking too softly, mumbling, or having other speech difficulties. Other characteristics of poor teachers were listed as: coming to class unprepared, doing poor blackboard work, using poor texts, and/or making unclear assignments.

Excellent teachers, in contrast to poor ones, almost never belittle students or dwell on the obvious. These "effective" teachers were also rated by students as being very clear in their presentations. However, they were criticized for talking too rapidly and often assuming that the class knows more than it really does.—*From Science Digest, May 1956.*

Characteristics of the Self-Styled Scientist

ADELIA M. BEEUWKES

Associate Professor of Public Health Nutrition, School of Public Health, University of Michigan, Ann Arbor

MYTHS, magic, and superstition are as old as the history of man. Food fads are not new but the forms they take vary from month to month, and year to year. In 1908, C. Stanford Read, a physician, published *Fads and Feeding* (1). Apparently, the problem was of great enough concern in London to warrant the publication of such a book. The first paragraph of the preface reads very much as if it might have been written in 1956, rather than in 1908, before the word "vitamin" had found its way into medical and lay literature.

> Modern civilization seems to bring many undesirable factors with it, and one which stands out prominently is the "fad" which has crept into every department of our daily life. Medicine has of late made great advances, especially on its "preventive" side, but where most physicians fear to tread, some well-meaning individual steps forward and unauthoritatively and unscientifically shows the public that for centuries they have been courting disaster by swallowing the wrong food. It is undoubtedly right that we should all be, to some extent, upon our guard concerning what we put into our interiors; yet this introspection can be carried too far until it becomes morbid, and by its means we may bring about the very result we wish to avoid.

The author was concerned about the amount and type of dietetic information published in that day, even as we have serious concern today.

> Since the lay press has been so multiplied and extended, and has become such a power in the land, many self-appointed authorities, by means of the columns of newspapers and magazines, think fit to dogmatize on some particular dietary or to rail against the pernicious effects of certain foods. Doubtless many, though unscientific and illogical, are sincere in their intentions; yet many others, I fear, recognize that their peculiar views and dogmatism will bring them kudos and pecuniary compensation, which is the real aim they seek.
>
> The more extreme a faddist proclaims himself, the more converts rally beneath his standard; and for the sake of novelty, for the sake of belonging to an elect cult, there seems to be an ever-increasing number of individuals who for a time, at least, will believe any fresh dietetic rubbish that comes under their notice.

The self-styled scientists of 1956 have large and apparently very eager audiences. Radio, television, and the printed word carry news of wonderful new discoveries, unknown to medical science, guaranteed to cure most of the illnesses which the laymen may have heard of. Half a century ago, the medicine man could talk from only one street corner at one moment, and his audience was counted by the hundreds or less. Today, his message can be spread across the nation in a few moments and his audience is counted in the millions.

We must not delude ourselves by looking upon the faddist as merely a "queer fellow" to be tolerated. Food faddism is not amusing! It is a serious problem in the United States. Information describing the merits of some products is so cleverly written that the professional dietitian may need to read it twice before all of the half-truths, inconsistencies, and the misinformation presented by implication stand out in all their infamy.

The self-styled scientists are obviously making a comfortable living, for each year many new products and ideas are offered the American public. Food faddism is, in fact, such a widespread enterprise that it is difficult for physicians and dietitians to be familiar with all of the products and theories currently popular. At the same time, while science continues to emphasize the relation of nutrition to total health, the pseudo-scientist takes advantage of the ever-growing interest in nutrition. The consumer has limited knowledge of the science of nutrition, but has heard the names of some of the vitamins and minerals so frequently during the past decade that products seem "right" if a familiar term or two appears on the label of a highly advertised item.

How can we best help the confused consumer? We can meet ignorance with knowledge and superstition with fact only when we have sufficient knowledge. Quackery and food faddism will be put to flight more effectively by widespread dissemination of the truth than by indignant denunciation.

Serious efforts have been and are now being made

to help the public determine for themselves a sane and sensible road to good nutrition. Nutritionists are becoming increasingly aware of the need for seeking out the specific areas of misinformation. During the last several years, the Community Nutrition Section of The American Dietetic Association has been gathering data about food misinformation currently popular in many parts of the United States and has prepared a mimeographed compilation of such statements (2). With these facts in hand, many of the members of the profession are attempting to broaden their sphere of education to include the specific subject areas which appear to need clarification. However, it would be impossible to present to the public the whole truth about all of the people, products, and pamphlets that misinterpret the truth as we know it in the science of nutrition, for the law of the land and the cash register of the company involved determine rather frequent alterations in products and merchandising schemes. However, all of the pseudo-scientists have some characteristics in common, and these characteristics can be described to those who wish to make an intelligent evaluation of the self-styled scientists' written or spoken word. Some of the characteristics will be reviewed.

Advertising and Distribution Methods

The first characteristic deals with the method of advertising and the sale of the product. The self-styled scientist makes a direct sales approach through advertising, distribution, or both. His products and his pamphlets are not distributed by the medical or dietetic professions. This pseudo-scientist is not eligible for membership in ethical, scientific organizations and, consequently, cannot present his theories through the meetings or publications of reliable groups. The faddist, of necessity, by-passes the professions and deals directly with his customers, offering helpful hints for self-diagnosis and simple directions for self-treatment.

Perhaps a comparison of the direct-sales technique of the faddist with the individualized, studied care of the physician would be impressive to some of our vast public who still waiver on the brink of the faddist's trap. For example, does the surgeon in your community hospital set aside August as the best month for appendectomies with a special price if three members of one family participate in the plan this August? The faddist usually offers an extra bottle of pills or an extra book for a reduced price. Does your physician run a testimonial advertisement showing pictures of ten patients whose gall bladder disease was treated with medicine X? The faddist is apt to do just that. Does your physician offer a money-back guarantee if your diabetes is not cured in thirty days? Some faddists offer a money-back guarantee for the cure of arthritis, cancer, diabetes, and so on. Does your physician send you a circular suggesting that if you are tired and did not sleep well last night you are suffering from a lack of two vitamins and twenty-eight minerals? The faddist has no qualms whatever about diagnosing across the miles. In fact, just one convincing advertisement in fifty newspapers covers a good bit of territory and perhaps the "take" will be great enough so that the faddist can be "curing" people thousands of miles away before the thirty-day guarantee runs out.

All of this sounds ridiculous, doesn't it? But, we must recognize that the faddist's method of distributing pills and information must be described for what it is. Guarded words and pleasant hints about the unethical procedures will not be very impressive to a public which has grown up in a shower of superlatives. The first characteristic of the self-made scientist is his use of the direct-sales approach. This approach is contrary to all that is done in the medical profession, and to those who want to learn the truth, this characteristic should be clue enough.

Exaggerated Claims and Promises

The second characteristic is the promise to prevent or cure any of a number of diseases. Frequently, the product is sold on a money-back guarantee, for a limited time only, or as a special introductory offer. When penicillin was first available, did a full-page story in the Sunday supplement urge the public to rush to the hospital because the supply was limited and it would be "first come, first served"? The faddist promises a short-cut between cause and effect and offers both diagnosis and treatment—for a price, of course. The seeming simplicity of the faddist's plan must suggest to the layman that the professional people either do not know or do not want to share these secrets.

The thinking person should recognize that the same medication would not be a likely means of both raising and lowering blood pressure, of preventing cancer and of curing it. The public apparently finds it difficult to recognize that medications that promise to prevent and to cure thirty-three or more diseases, complete with testimonials and a money-back guarantee, are worthless or dangerous.

Impugning Our Agriculture

The third characteristic is the stated or implied theory that American agriculture is undermining the health of the people; that we are all now or will soon be victims of numerous horrible diseases that "devitalized" foods carry in their wake. In this area of misinformation, our profession must work cooperatively with both the field of agriculture and with the medical profession.

These anti-chemical theories prey on the fear of the people, and fear is a strong emotion to combat. Usually, this group of faddists bitterly assails the regulatory agencies of the state and federal governments and continually attacks the integrity and safety of our food supply. A clue to this characteris-

tic, as with the others, is that the faddist is selling something—a pill, a pamphlet, a panacea, foods grown under special conditions, and so on.

Half-Truths and Misinterpretations

Perhaps the fourth characteristic is the most difficult to combat—it is information and the way it is presented in print, from the lecture platform, and by the door-to-door salesmen. The writers for these pseudo-scientific products have a flair for words and can write volumes of trash and somehow make it sound reasonable to many who read it. The faddist writes in a confusing, yet subtly convincing manner. He uses a generous selection of quotations from reliable scientists who shudder with good reason when they see how their statements have been taken out of context and used to an unethical end.

The pseudo-scientist watches hawk-like for the published reports of the reputable workers. Isolated and sterile fragments of the whole scientific report are torn out and, like a squirrel who runs away to consider the value of the nut he has found, our pseudo-scientist rushes to seclusion with his prize—torn fragments of knowledge. He considers their value to him and sets about weaving a few facts of truth into a garment of many colors—a garment that looks rather impressive at a distance and under a dim light. This blend of good and poor threads disintegrates completely before the microscope when a scientist trains his eye on the glass which shows truth and untruth in their proper proportion.

Because he is not accepted as a reputable, professional worker, the pseudo-scientist does two things simultaneously. He snatches bits of information from scientific papers and in the same breath confides to "his followers" that the field of medicine, nutrition, or other does not accept his theories because the scientists are stubborn and are really not cognizant of the mysteries of life which can be purchased for several dollars—mysteries in a bottle, mysteries in a special food, mysteries in a pamphlet or book. Mysteries, indeed! Be skeptical of such mysteries. Beware of theories that have not been brought into the daylight of scientific research. Beware of those who are isolated from the men of science because the theories advanced are a secret from the earth, a mountain in Tibet, or from a nightmare that ended in a dollar sign.

A little truth is sometimes used in an attempt to leaven a lot of rotten dough, and the icing on the product is so thick and beautiful that the unsuspecting public accepts the information as the truth. Technical terms are bandied about quite freely. It apparently does not matter that neither the salesman nor the customer understand the language so long as products are sold. The public is assured that the product or the pamphlet or both are prepared "just for people like you," and emotion rather than intellect comes to the fore. Then, at the psychologically correct moment, the listener, reader, or viewer is informed that the price is a special bargain just now and it would be best to buy rather a large supply *now* for the stock is limited and the bargain price cannot be available long.

It will be easier to help the public recognize the first three characteristics of the self-styled scientist mentioned above, for great skill is employed in the preparation of the printed word, and it is difficult to warn against narrative presentations without studying each one individually. We can, however, inform the public that no matter how sweet and innocent the printed word may appear, if prevention and cure of diseases, testimonials, and the urge to buy something are within the framework of the information presented, the product is the brain-child of a pseudo-scientist.

Financial Motivation

The most obvious characteristic of all is the financial one. First, the printed word or spiel of the salesman skillfully helps the customer raise serious questions about his health, his food, and his future. Second, the customer's present food habits are condemned as unscientific and predictions of dire things to come help to set the stage. Finally, when the subject is overcome with anxiety, a promise is made that all will be well, if the frightened customer buys something—and that something could be almost anything.

The public does not appear to realize that if the diagnosis is wrong, it is unlikely that the treatment will be right. Furthermore, people are sometimes tricked by the promise of a free trial offer with a money-back guarantee. In some instances, the only thing lost by the unsuspecting customer is money. In other cases, the fantastic promises have given people a false sense of security, and medical care is sought much too late. In some instances, the products have actually harmed the persons who have bought them in what they considered to be good faith. We must recognize that the promises and predictions are so glowing that the cost involved appears trivial at the moment of the purchase.

Summary

The following characteristics of the self-styled scientist can be described to those who wish to use discrimination in the purchase of pills, pamphlets, gadgets, and special-purpose foods.

(a) These products are sold directly to the purchaser or advertised to be obtained without the advice and consent of a physician. The medical profession is by-passed completely.

(b) Some products promise to prevent or cure a number of diseases and, consequently, encourage self-diagnosis and self-treatment.

(c) Several products state or imply that the American food supply is inadequate and that the

average grocery store cannot provide foods with which we can meet our nutritional needs.

(d) The information is presented in rather convincing, personalized double-talk. The approach is usually emotional rather than intellectual.

(e) Self-styled scientists are selling something. Why else would they be in business?

What can we do to help the public protect itself from the faddists?

(a) Members of the medical and allied professions must be aware of the products and the people undermining a sane approach to preventive medicine. We must be ready to answer questions with specific information about the product in question or be willing to obtain such information. We must know the facts, or where to obtain them.

(b) We have an obligation to help those who wish to know the truth by participating in public service programs, such as radio, television, newspaper, community organizations, and so on when invited.

(c) As sound nutrition education slowly develops in our schools, we will have, we hope, a more discerning adult population.

(d) Finally, we must expect and be alert to an ever-growing variety of claims and clans in our midst, for the public is becoming more and more interested in nutrition and the self-styled scientists are capitalizing on this interest. Our best method to combat misinformation is to be influential in our own program of nutrition education.

REFERENCES

(1) READ, C. S.: Fads and Feeding. London: Methuen & Co., 1908.

(2) COMMUNITY NUTRITION SECTION: Food Misinformation. Mimeo. Chicago: Am. Dietetic Assn., 1952–53.

ABC's of Bread Storage

Methods of storage may spell the difference between serving appetizing, fresh bread of good flavor and texture, or stale, crumbly bread that patients and customers reject. Signs of staling are loss of flavor and of the aroma of fresh bread, an increase in firmness and crumbliness, and development of a harsh texture. To guide us in proper procedures, the American Institute of Baking has prepared a one-page summary on proper methods of bread storage, which included the following points.

Wrapped bread or packaged rolls should be left in original wrappers when placed in storage units. In the modern bakery, bread is scientifically wrapped in moisture-resistant material, designed to maintain an ideal, humid atmosphere. When serving bread or when making sandwiches, remove only as many slices as are needed. Fold the excess wrapping material over the remaining bread to retain moisture and to exclude air-borne mold spores.

Bread or rolls which may be purchased unwrapped can be kept satisfactorily if wrapped in moisture-vaporproof papers or, if placed in a moisture-resistant bag before storing. Exceptions are the hard- or crisp-crusted breads and rolls. These products are best when eaten fresh.

Properly wrapped, bread may be stored satisfactorily at room temperature in a clean, dry, ventilated storage unit, container, or drawer. Increased ventilation of the unit should be allowed during hot weather. Such units should be placed away from all heat-producing equipment, such as ranges, refrigeration units, radiators, water heaters, or clothes driers. Temperatures above 80°F. foster mold growth.

Clean, dry containers are an unquestionable necessity for giving bread the care it deserves. All storage containers should be thoroughly washed weekly. Baking soda dissolved in warm water is the preferred agent for odorless cleaning. The unit should be dried well, including all joinings, and it should be free of crumbs. Any remaining moisture or crumbs may favor mold growth.

Bread may be stored in the refrigerator to retard mold growth, especially during hot weather, but the longer the refrigeration, the firmer the bread becomes. Refrigeration steps up staling, and the use of wrappers or special containers does not offset the effects of cold temperature on bread freshness.

If frozen, bread should be stored in frozen food cabinets at 0°F., or lower. These temperatures keep the flavor, freshness, original moisture, and aroma of bread intact if it is wrapped securely in moisture-vaporproof material. Bread, thawed or fresh, stales at the same rate under like storage conditions. Fresh hard- or crisp-crusted breads or rolls should be wrapped loosely in kraft paper. To use, unwrap and thaw bread at room temperature. Heat uncovered in a hot oven for about 5 min. and serve immediately. Freezing stale or partially stale bread will not restore its freshness.

Nutritional Claims in Food Advertising[1]

RITA S. ROSENBERG, Ph.D.

Acting Chairman, Home Economics Department, Adelphi College, Garden City, New York

ONE area of contemporary American living which is believed to have a significant effect on the buying and eating habits of the public is advertising, a source of incidental education for many people. The responsibility of food advertisers to the consumer in this connection is great, and their integrity as to the authenticity of the statements made in their advertisements is an important factor in the approval or disapproval which nutritionists may give to such statements.

Food advertisements are often formulated to appeal to the consumer on the basis that the advertised food can maintain or promote health. It is fact, however, that the body does not utilize foods as such, but rather the nutrients contained therein. Furthermore, it is the diet as a whole that must be considered as one factor in maintaining health, rather than any single food. "Exaggeration or implication that all of the nutritive values reside in a single food or any undue emphasis on the nutritional or physiologic values of any one food is a form of deception" (1).

Our knowledge of nutrition has increased considerably in recent years, and it is certainly true that the application of nutritional knowledge is essential to the well-being of people everywhere. One of the ways for the general public to be informed about nutritional advances is through advertising which, according to a statement made by the Advertising Federation of America in 1946, "aims to inform the consumer and help him buy more intelligently." Thus, food advertisers have an obligation to the readers of their advertisements. It has been said that advertising is a form of adult education (2, 3); hence one would expect the newer knowledge of nutrition to be reflected in food advertisements.

Method of Study

To determine what statements food advertisers made about the nutritional values of their products in the light of knowledge available at the time a statement was made, a study (4) of the food advertisements appearing in the women's service magazines from 1901 to 1950 was undertaken.

The women's service magazine with the largest current circulation was selected for study on the basis that it was representative of the food advertising published in all five of the leading women's service magazines, all of which are similar in purpose, content, and cultural level. Also, since this magazine enjoys the widest circulation, its advertising reaches the largest consumer audience. In addition, a preliminary survey indicated that more than 50 per cent of all food advertisements in five sample issues (one for each decade) of these five magazines were identical.

The 25 per cent sample of the issues published during the five-decade period was chosen to guard against the possibility of some advertisements being placed only at certain times of the year and also to mitigate the effect of the seasonal business cycle in advertising, in which summer and January issues are traditionally "light" on advertising. For 1901, the January, May, and September issues were studied; in 1902, February, June, and October issues; in 1903, March, July, and November issues; and in 1904, April, August, and December. This cycle was then repeated for each four succeeding years. A second page-by-page survey was later undertaken as a check to prevent omissions.

While all food advertisements in the sampling were noted, only those making some kind of nutritional claim which was specific enough to evaluate were analyzed specifically. This procedure thus eliminated all food advertisements which stated that the food in question was healthful, nutritious, or "good for you." Such claims were categorized as "general nutritional claims." Statements which were analyzed in detail related (directly or indirectly) the advertised product or some constituent of it to the functioning or welfare of a part of the body or of the body as a whole. These claims were classified as "specific nutritional claims." Advertisements stressing flavor, economy, or some factor other than nutrition were classified as "non-nutritional."

This classification of food advertisements was followed by a second sub-classification into food

[1] Based on a thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, New York University. Received for publication November 23, 1955.

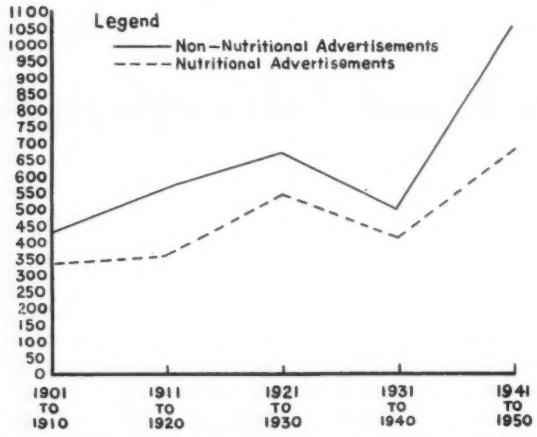


Fig. 1. Total nutritional and non-nutritional food advertisements by decades.

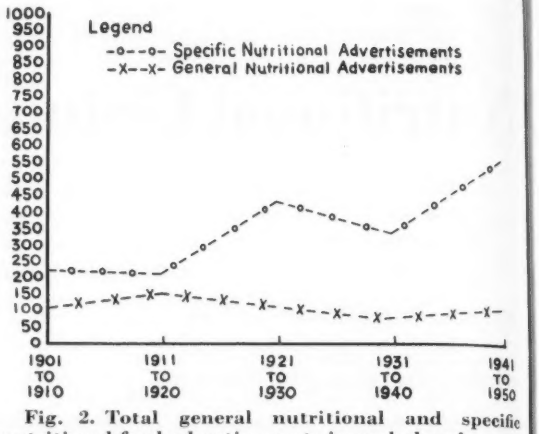


Fig. 2. Total general nutritional and specific nutritional food advertisements in each decade.

groups. The eleven food groups of the Department of Agriculture were used with two additions: miscellaneous and infant foods. The miscellaneous group included everything not specifically belonging to one of the other groups, such as spices, condiments, and beverages. Advertisements on several foods or different food groups were also classified as miscellaneous. The infant food group included those foods prepared and advertised specifically for infant consumption.

Number of Advertisements

A numerical analysis of the data reflected the growth of both the food industry and the advertising business. In the five decades under study, the total number of food advertisements in the first decade was lowest, and the total in the fifth decade highest. Generally, the number of advertisements in each food group was also lowest in the first decade and highest in the fifth. Every group except the infant foods group showed an increase in the number of advertisements in the fifth decade of at least 50 per cent over that in the first decade. The four largest groups were: miscellaneous; grain products; sugars, sirups, sweets; and meat, poultry, fish. No advertisements were found in the potatoes, sweet potatoes group and only three were seen for eggs. The next lowest group was green and yellow vegetables.

While there were more nutritional advertisements than non-nutritional in some of the individual food groups, the total number of non-nutritional advertisements was consistently greater than the total nutritional advertisements in each decade. Figure 1 summarizes these data while Figure 2 shows that there were more specific nutritional advertisements in each decade than general nutritional advertisements. There were also more specific advertisements in each food group than there were general.

The data sustained the first hypothesis of the study, namely, that advertisers generally use non-nutritional claims in food advertisements.

Types of Nutritional Misstatements

Nutritional statements were analyzed for accuracy by checking with recognized authoritative sources at the time the statements were made. A nutritional statement appearing in a 1902 advertisement was checked against textbooks and publications which had been printed prior to 1902. Experimental studies or literature were not used in this connection. In this analysis, ten types of errors were found. These are listed below with some examples of each. For the reader who is interested in other analyses of nutritional inaccuracies, fads, and fallacies, some of the bibliographical references may be consulted (5–11).

1. Testimonials to the efficacy of a product, or references to "doctors" or "authorities."
   a. "Tests by school authorities show that children with the hot-cereal breakfast gain in weight as they should, have redder blood, do better school work."
   b. "To be sure of good appetite and good digestion, eat good soup every day. All food authorities agree on this."
   c. "Dietitians agree that the ideal way to obtain the most good from milk is to eat it instead of drinking it."
2. Statements playing on the credulity, ignorance, or fears of the public.
   a. "Grape juice makes rich red blood."
   b. "Children crave natural food until their mothers pervert their tastes by the use of unnatural foods which develop wrong propensities and desires. Like begets like—pure foods, pure minds."
   c. "Beauty is developed like anything else. A girl who won a beauty contest was fed with Beverage X from the start."
3. References to any one food as satisfying all

nutritive requirements, as being indispensable, or as being perfect.
   a. "Bread is supreme in nutrition, your best food."
   b. "X cheese has everything the human body needs to maintain health and strength. It is the most nutritious of all foods."
   c. "Walnuts supply all vital food elements in ideal proportions."
4. Pseudo-scientific or confusing language.
   a. "The mineral salts in lettuce are essential if we wish to make our bodies fill the temple of the soul."
   b. "X rice does not 'rough' the stomach or intestines, and eaten daily month after month continues stimulation of life and organic processes in the body."
   c. "Most food bills are lessened by X cereal because you receive nourishment which does not require additional heat energy for redevelopment of already formed tissue."
5. References to the unique quality of foods.
   a. "X cereal is the only cereal that forms an ideal natural combination with fruits."
   b. "High-grade gelatin has a unique value as a tissue saver and prevents the vital tissues from wearing down unduly."
   c. "Bacon has energy-building fat which nothing can replace."
6. Comparison of one food with others to indicate the superiority of the advertised product.
   a. "Tea will poison your system with tannic acid; coffee will make you a nervous wreck. Cocoa is a builder of strength and vitality; if you drink it, you will enjoy perfect health."
   b. "Many foods are good but you cannot live on them alone. Meat is lacking in starch, potatoes in fat, eggs in acid, fruits in nutriment. X cereal contains all necessary food elements in absolutely correct proportions."
   c. "Coconut is more nourishing than bread."
7. Ambiguity of certain terms.
   a. Use of "energy" to indicate vitality and pep, as well as the more scientific meaning of caloric value.
   b. "Tonic" to mean stimulating, healthful, or beneficial in an active sense.
   c. "Food value" or "nutritive value" to mean anything that suited the purpose of the advertiser, viz., caloric value, protein content, content of all the nutrients present, or just a general, vague description of the value of the product.
   d. "Digestibility" to mean ease or speed of digestion, as well as the more scientific meaning of completeness of digestion.
   e. "Acidosis" to mean digestive distress, supposedly from acidity, and not the correct medical meaning which is synonymous with ketosis.
   f. "Fattening" and "non-fattening" to be a positive quality of foods, rather than an evaluation of the diet as a whole based on the energy needs of the individual and the total fuel value of the food ingested.
8. References to the therapeutic or remedial value of foods.
   a. "X rootbeer purifies the blood, tones the nerves, aids digestion, gives vigor and vim."
   b. "Yeast stimulates digestion, keeps the body more resistant to disease, increases intestinal action, stimulates production of white blood corpuscles, eliminates the need for laxatives, clears up skin disorders."
   c. "X brown rice has been used for chronic headaches, sick stomach, constipation, malnutrition, heart trouble, blood vessel complaints, and liver disorders."
9. Exaggeration and over-simplification of food values or functions.
   a. "The right kind of phosphorus turns into nerve tissue and brainwork just as fat meat or starch turns into heat, and lean meat or the gluten of wheat into human muscle when eaten."
   b. "Caffein can make quiet children more listless and sluggish, and active children nervous and irritable. It robs children of rosy cheeks and sparkling eyes, lowers vitality, hampers development and growth, lowers resistance to disease, crowds milks out of the diet."
   c. "Brazil is noted for a large coffee production. Its people are inveterate coffee drinkers, yet uniformly robust and healthy."
10. Statements which exceed established fact or reflect experimental work.
   a. "The discovery of vitamins is the greatest epoch-making step toward complete immunity from disease since the discovery of radium."
   b. "Lettuce plays an extremely important role in the development of every human being into a perfectly normal man or woman."
   c. "Three-fourths of all sickness is traceable to improper elimination."

Long-Term Advertising Trends

Inaccurate statements, such as those just listed, were found throughout the entire fifty-year period. However, there were many more such statements at the beginning than at the end. Nutritional statements in the first three decades showed no distinguishable differences in terms of accuracy, but a definite improvement was evident in the thirties and an even greater one in the forties. By 1950, state-

ments of uniqueness, perfection, indispensability, and remedial value of foods, as well as the most objectionable testimonials had been eliminated. Exaggeration, implication, undue comparison, oversimplification, and ambiguity, however, still existed.

By 1950, then, there was a strong indication that the quality of nutritional claims in food advertisements had improved, and it is, of course, to be hoped that this trend will continue. The second hypothesis of the study was that food advertisements often make statements about nutrition which are not in substantial agreement with accepted authority. The data sustained this hypothesis for the first three decades, but the trend toward greater accuracy in the fourth and fifth decades made a positive statement of support or rejection difficult as of 1950.

Errors of Omission

In many of the statements listed above, it can be seen that there are errors of omission as well as of commission. For example, it is clearly not true that life is prolonged by eating freely of ripe olives and pure olive oil. The following statement is, however, true: "Beans are 84 per cent nutriment and contain 23 per cent protein." Tables of food composition all agreed on this analysis for dried beans, but the food advertised was canned pork and beans, for which the composition was generally agreed to be as follows: 68 per cent water, 6.9 per cent protein, 3.3 per cent fat, 19.7 per cent carbohydrate, and 2.1 per cent ash. The advertiser's error was in omitting the whole truth.

Other examples of such omissions follow, with clarifying explanations in parentheses:

(a) "Plain edible gelatin is rich in lysine, nature's growth-promoting element." (Lysine is only one of nature's growth-promoting elements.)

(b) "Eat bran for safe elimination." (Bran is very irritating for some people.)

(c) "Cereal X is processed to make assimilable nearly 97 per cent of the natural force or nutriment of the grain." (Carbohydrates are 97 per cent digestible regardless of the method of manufacture.)

(d) "Note the good effects of taking beef extract X in a glass of warm milk three times daily." (Beef extracts have limited nutritive value, and any good such a mixture might do would come chiefly from the milk.)

This tendency to omit the whole truth may be quite serious. If a cereal advertiser discusses the fine protein in his product, he should certainly mention that the amino acids of a cereal are not a complete source of protein, and that the cereal must be combined with milk or some other excellent protein source for the protein to be of high quality. In the same way, milk should not be advertised as a perfect or nearly perfect food without the advertiser's mentioning that milk cannot contribute ascorbic acid or iron.

The Problem

Even where home economists and nutritionists are employed by commercial companies, there is a tendency to be clever about the wording of advertisements, rather than to tell the whole truth. The primary purpose of advertising is, of course, to sell a product or service, but the consumer must also be able to count on what advertising says. As the flagrant errors, for example, claiming uniqueness or perfection of a food are eliminated, the problem of developing discrimination in recognizing more subtle types of inaccuracies becomes increasingly difficult for the layman.

As stated above, there was a marked increase in the number of food advertisements from 1901 to 1950. This general increase was accompanied by a comparable increase in the number of advertisements making no nutritional claim than in those claiming some nutritional benefit. In a negative sense, this was cheering, for if advertisers tend to make less use of the appeal, we can hope that the problem will eventually disappear.

However, it is actually not quite that simple, for fairly constant percentages of non-nutritional and nutritional advertisements were maintained throughout the entire fifty-year period. For example, there might be forty nutritional and sixty non-nutritional advertisements in the spring issues for one year, and a few years later, the numbers might have increased to fifty and seventy-five, respectively, the proportion of 40 per cent to 60 per cent remaining the same. Thus, while there are fewer nutritional advertisements than non-nutritional, and a smaller actual increase in the former than in the latter, there are still more nutritional claims than in former years.

Furthermore, a trend toward more specific nutritional advertisements was noted within the broad classification of "nutritional advertisements." That is, whatever increase occurred in this category was an increase in the "specific" sub-classification rather than in the "general" class.

There can therefore be no complacency, except in terms of those improvements already noted. Every teacher of home economics presents a lesson in evaluation of advertisements at some time to awaken her students to the perils of swallowing advertising claims "hook, line, and sinker." For the many Americans who are nutritionally uninformed, the printed word is gospel. The situation is reminiscent of the cartoon on the power of the printed word, in which a young girl is shown at a window through which bright sunlight is streaming. She, however, is dressed for rain, complete with raincoat, hat, high boots, and umbrella, and is looking at a newspaper on the table in front of the window. The headline is "rain today."

If food advertisers felt obligated to inform the public in the basic essentials of nutrition (and one of the avowed purposes of advertising is to give information), the sum total of printed text should be

a kind of nutrition primer. An interesting study in this connection might be an analysis of food advertisements for nutritional statements and a compilation of these statements under appropriate headings to learn how much information could actually be obtained by the consumer.

Another aspect of the whole problem is the need for including important information about nutrition in food advertising, even where the advertiser prefers to emphasize a non-nutritional appeal. If we find that there is a deficiency of calcium in many American diets, might it not be possible for advertisers to mention the need for calcium. This might, of course, involve the employment of more nutritionists to act as consultants to advertising agencies. It might also involve the use of an existing agency or a new group to do an over-all directing job, a group to which advertising people might turn for the imperative theme of the moment.

Whatever the solution, it is obvious that teachers, nutritionists, and other home economists cannot relax their vigilance, which must extend to colleagues and parents, as well as to students. They must continually strive for greater consumer education and knowledge in nutrition, and for the application of this knowledge in everyday living for better health and efficiency.

REFERENCES

(1) Council on Foods and Nutrition. Accepted Foods and Their Nutritional Significance. Chicago: Am. Medical Assn., 1939, p. 14.
(2) Carlson, A. J.: Facts and fancies about food fats. Am. J. Pub. Health 31: 1181, 1941.
(3) Houghton, D.: The Educational Value of Advertising. Master's thesis, N. Y. University, 1930.
(4) Rosenberg, R. S.: An Investigation of the Nature, Utilization, and Accuracy of Nutritional Claims in Magazine Food Advertisements. Ph.D. thesis, N. Y. University, 1955.
(5) Bogert, L. J.: Nutrition and Physical Fitness. 6th ed. Philadelphia: W. B. Saunders & Co., 1954, chap. 23.
(6) The wonders of diet. Fortune 13: 86 (May), 1936.
(7) Gauss, H.: Food fads. Hygeia 13: 210, 1935.
(8) McCray, D. W.: Food fads, fallacies and facts. Hygeia 19: 646, 736, 820, 912, 994, 1941; 20: 48, 1942.
(9) Mitchell, H. S., and Cook, G. M.: Facts, Fads and Frauds in Nutrition. Mass. Agric. Exp. Sta. Bull. No. 342, April, 1937, p. 31.
(10) Rose, M. S.: Belief in magic. J. Am. Dietet. A. 8: 489, 1933.
(11) Stone, W. J.: Dietary facts, fads and fancies. J.A.M.A. 95: 709, 1930.

New Sulfonamide Compounds for Diabetes

The following statement concerning the new oral sulfonamide compounds for treating diabetes mellitus has been made by Dr. Henry T. Ricketts, President, American Diabetes Association:

"For some time, American Diabetes Association members have been following closely the investigations of sulfonamide compounds recently reported from Germany. These drugs are said to lower the blood sugar when taken by mouth and have been proposed as a possible method of treating diabetes mellitus in place of insulin by injection.

"The hope that has undoubtedly been aroused among diabetics by recent reports should be tempered with caution. The new antidiabetic compounds are still definitely in the experimental stage. Their ability to control diabetes has been largely limited to the relatively mild cases of diabetes among middle-aged and obese patients. In fact, investigators report that many of the more severe diabetics respond poorly, if at all, to the new drugs.

"So far as we know, none of the new compounds under study in this country or abroad has been demonstrated to control satisfactorily patients who go into acidosis (diabetic coma) easily. Included in this group are juvenile patients, thin patients, and many who have been taking large amounts of insulin over considerable periods of time.

"Therefore, it must be stated for the present that there is no immediate hope that an oral preparation can be substituted for insulin in all cases.

"There are other deterrents to the widespread use of these compounds in the near future. The mechanism by which the compounds act in the body, when they do act, is not fully known. It is not certain that the lowering of the blood sugar which these compounds produce in some cases is accomplished in a manner beneficial to diabetics. Toxicity has been experienced by some patients, although there are no indications thus far that this has been serious. The possibility exists that prolonged use might result in damage to the kidneys, liver, and blood forming tissues.

"The new antidiabetic drugs are not now on the market in this country. If these compounds should become available, they should not be taken by diabetics except under close supervision of a physician.

"In the meanwhile, many groups of experienced researchers in the United States are devoting their efforts to exhaustive studies of the drugs and clinical results are being compiled. It will be some time, however, before a complete evaluation can be made. The new compounds may prove to be an important step toward the long-sought oral preparation for the control of diabetes mellitus; however, until that time arrives, the basic treatment remains diet, exercise, and insulin when indicated."

Sodium and Potassium in Fish from the Canadian Pacific Coast[1]

J. R. McBRIDE and ROBERT A. MacLEOD, Ph.D.

Fisheries Research Board of Canada, Technological Station, Vancouver, B. C.

SODIUM-restricted diets are widely used in the dietary management of a number of diseases (1, 2). To devise varied and nutritionally adequate low-sodium diets, dietitians require reliable estimates of the sodium content of foods. The Food and Nutrition Board of the United States has listed, by reference, nearly a thousand analyses encompassing hundreds of foods (1). From this list, a table has been prepared called "Estimated Best Values of the Sodium Content of Foods." As indicated in the report and stressed by Clifford (3), such estimates represent only an "educated guess," and much more work must be done before such figures can be accepted with good confidence. The values for the sodium content of fish have been recorded for only a limited number of genera, and no attempt has been made to determine the extent of species variation.

The present study was undertaken to determine the sodium and potassium content of fish caught in commercial quantities along the northwest Pacific Coast. The results obtained are listed according to species. Certain variations within species due to size and season of catch are also recorded.

Experimental Procedure

All fish were obtained either from a wholesaler or directly from fishing boats. The fish were cleaned and then sampled according to a slight modification of the official A.O.A.C. method (4). Three slices were removed from each fish, one from behind the head, one from the mid-section, and one from just in front of the tail. After removing the skin and bones, flesh from the three slices was pooled and homogenized. The method of preparing samples for analysis was similar to that described by Wallace *et al.* (5). Five-gm. samples of the homogenized fish were placed in Erlenmeyer flasks, and 3 ml. of reagent grade concentrated nitric acid were added. The samples were heated gently with constant agitation until evenly dispersed. The mixture was cooled, transferred to a 100-ml. volumetric flask, and diluted to volume with a solution containing 20 per cent ethanol in distilled water. The solution was filtered, and aliquots were diluted with sufficient 20 per cent ethanol to bring the samples within the range of sodium or potassium concentration required for use with the flame photometer. Ethanol was incorporated into the diluent to increase the sensitivity of the flame photometer to sodium and potassium (6).

All analyses were made using a flame photometer attachment for a Beckman DU spectrophotometer equipped with a photomultiplier. Most of the determinations were made with an oxy-acetylene burner, though more recently an oxy-hydrogen flame has been used. Preliminary studies established that calcium and potassium at the approximate levels present in fish did not affect the response of the flame photometer to sodium at the dilutions tested. Similarly, the sodium and calcium levels did not alter the response to potassium. The spectral line selected for the determination of sodium was 589 mμ and for potassium, 768 mμ.

Sodium and potassium standards were prepared by dissolving the respective reagent grade chloride salts in a solution of 20 per cent ethanol in distilled water. The recommended technique for determining the sodium or potassium content of a solution by comparison of its emission intensity with standards of slightly higher and lower concentration was used (7).

Results

The levels of sodium and potassium in the flesh of red spring salmon caught at monthly intervals

[1] Received for publication February 6, 1956.

[2] The authors take pleasure in acknowledging the fact that J. F. Murray assisted in various capacities throughout this work, and that Charles Brumwell aided in the analyses in the earlier stages of the study.

over a five-month period are shown in Table 1. It can be seen that from May to June there was a small drop and from June to July a very sharp drop in the sodium content of the flesh of fish of the same size range. The low sodium level attained in July was maintained in August. As the sodium content of the flesh went down, the potassium level tended to rise.

Not only was there a variation in the sodium content of fish of the same size caught at different times, but also with fish of differing size caught at the same time. Small red spring salmon caught in May had a significantly higher sodium content than medium or large red spring salmon caught in the same month (Table 1). In the case of this type of variation, however, the lower sodium level of larger fish was not counterbalanced by a higher potassium content. No significant difference in the amount of sodium and potassium in the flesh of red and white spring salmon of the same size range is apparent from the table.

TABLE 1

*Sodium and potassium content of spring salmon**

SIZE†	MONTH CAUGHT	NUMBER OF FISH ANALYZED	SODIUM		POTASSIUM	
			Average	Range	Average	Range
Red Spring Salmon‡			*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*
Small	April	9	55.7	53.5–58.0	352	330–395
Small	May	24	57.7	50.5–61.5	408	375–445
Small	June	3	51.4	49.2–54.2	408	395–430
Small	July	6	37.5	35.0–40.0	418	417–420
Small	August	7	39.5	35.2–45.0	447	410–470
Medium	May	11	39.4	32.0–47.5	376	350–408
Large	May	15	38.2	31.0–45.0	371	320–408
White Spring Salmon						
Medium	June	2	37.3	33.0–41.5	409	408–410

* Other common names for this species are: king, chinook, and quinnat.

† Small, 2 to 7 lb.; medium, 7 to 20 lb.; large, 20 to 40 lb.

‡ *Oncorhynchus tshawytscha.*

The sodium and potassium content of the flesh of four other species of salmon is shown in Table 2. In the Coho salmon, the variation in sodium content appears to occur with both size and season. This variation of size within a species is considerably more marked than that occurring from one species to another. The widest variation in sodium and potassium content within a species was that observed in Sockeye salmon, though all of the fish analyzed were quite uniform in size.

Values for various other commercially important fish are listed in Table 3. It can be seen that the tendency observed in salmon for the flesh of larger fish within a species to contain less sodium than smaller ones did not extend to lingcod or halibut. In the case of halibut, fish of medium size actually contained, on the average, slightly more sodium than those in the small size range.

Herring showed little variation in sodium content between September and January. This lack of variation with season contrasts with the change in the sodium content of spring salmon with time.

Discussion

The results reported here indicate that in salmon, more variations in sodium and potassium content may occur within any one species than between various species in the genus. These variations appear to be related, at least in some species, to the size of the fish and the season when the fish are caught. It also appears that the same relationships do not hold for the other genera investigated, since the sodium and potassium content of lingcod and halibut did not vary with size in the same way as salmon, and herring maintained a quite uniform sodium content over a five-month period.

It is interesting to speculate on the reasons why there appears to be this generic difference in variation of sodium content with size and season. The salmon, which do vary, spend a portion of their life-cycle in fresh water, while the other genera live their entire lives in the sea. It is possible that the

TABLE 2

*Sodium and potassium content of fresh Coho, Sockeye, Chum, and Pink salmon**

SPECIES	SIZE†	MONTH CAUGHT	NUMBER OF FISH ANALYZED	SODIUM		POTASSIUM	
				Average	Range	Average	Range
				mg./100 gm.	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*
Coho salmon (*Oncorhynchus kisutch*)	small	June	9	54.3	51.5–57.5	428	420–440
Coho salmon (*Oncorhynchus kisutch*)	small	July	10	50.8	42.0–57.5	409	385–450
Coho salmon (*Oncorhynchus kisutch*)	medium	July	21	39.7	33.0–45.9	427	420–440
Sockeye salmon (*Oncorhynchus nerka*)	small	July	42	47.5	39.2–60.0	391	340–453
Pink salmon (*Oncorhynchus gorbuscha*)	small	August	6	56.1	48.0–70.0	443	410–485
Chum salmon (*Oncorhynchus keta*)	medium	November	6	49.7	47.9–54.3	429	404–440

* Coho salmon are also referred to as silver salmon; Sockeye, as red or blueback; Pink, as humpback; and Chum, as dog salmon.

† Small, 2 to 7 lb.; medium, 7 to 20 lb.

TABLE 3

Sodium and potassium content of fish of various genera

SPECIES	SIZE*	MONTH CAUGHT	NUMBER OF FISH ANALYZED	SODIUM		POTASSIUM	
				Average	Range	Average	Range
				mg./100 gm.	*mg./100 gm.*	*mg./100 gm.*	*mg./100 gm.*
Lingcod (*Ophiodon elongatus*)	small	May	12	54.9	48.0–67.2	418	380–460
Lingcod (*Ophiodon elongatus*)	medium	May	6	51.8	49.5–54.1	478	475–480
Graycod (*Gadus macrocephalus*)	small	May	16	71.2	60.5–83.5	392	340–432
Halibut (*Hippoglossus stenolepsis*)	small	May	28	58.9	51.0–64.0	452	420–485
Halibut (*Hippoglossus stenolepsis*)	medium	May	9	62.0	49.5–70.0	475	435–510
Herring (*Clupea pallasii*)	†	September	9	74.0	73.0–74.5	367	355–380
Herring (*Clupea pallasii*)	†	November	10	75.6	70.0–83.0	451	425–470
Herring (*Clupea pallasii*)	†	January	12	72.2	66.0–77.9	441	405–472
Brill (*Eopsetta jordani*)	small	November	6	85.2	82.5–87.0	402	390–416
Lemon sole (*Parophrys vetulus*)	small	November	6	87.1	85.6–88.2	402	395–416

* Small, 2 to 7 lb.; medium, 7 to 20 lb.; large, 20 to 40 lb.

† The average weight of the herring was 4 to 5 oz.

variations in sodium content noted in the salmon may be related in some way to the period in their life cycle in which they were caught; for instance, to the nearness of the approach of the fish to the time of their spawning migration. Much further work, of course, remains to be done to establish any such relationship.

The estimated best values for various species of fish reported by the Food and Nutrition Board (1) include the following sodium values (in milligrams per 100 gm. flesh): salmon, 50; halibut, 56; herring, 100; and codfish, 65. Only the estimated best value for halibut agrees well with those reported here. Our results indicate that the value for a given species of salmon can differ from the estimated best value by as much as 25 per cent, depending on the factors mentioned earlier. In the case of herring, the estimated best value is about 33 per cent higher than the average obtained in this study, where thirty-one different fish were analyzed.

Summary

The sodium and potassium levels in the flesh of lingcod, graycod, halibut, herring, brill, lemon sole, and five species of salmon (genus *Oncorhynchus*) caught along the Pacific Coast of Canada are reported. In salmon, more variation in the sodium and potassium content occurred within a species than between species. The sodium concentration in the flesh of spring and Coho salmon weighing 7 to 40 lb. was 25 to 30 per cent less than that in the same species caught at the same time weighing 2 to 7 lb. The flesh of spring salmon caught in July and August contained up to 30 per cent less sodium than that from fish of the same species and size range caught in April and May. In the case of lingcod and halibut, little variation in sodium and potassium content with size was observed, and with herring no significant change was recorded in sodium and potassium content over a five-month period. It is suggested that the change in sodium and potassium content of salmon may be related to the fact that part of their life cycle is spent in fresh water. Some comparisons are made between the sodium and potassium values recorded in this study and the estimated best values reported by the United States' Food and Nutrition Board (1).

REFERENCES

(1) Food and Nutrition Board: Sodium-Restricted Diets—The Rationale, Complications, and Practical Aspects of their Use. Natl. Acad. Sci.—Natl. Research Council Pub. No. 325, July 1954.

(2) Bing, F. C.: Nutritional aspects of low-sodium diets. Natl. Canners Assn. Information Letter No. 1325, February 28, 1951.

(3) Clifford, P. A.: Sodium content of foods. J. Am. Dietet. A. 31: 21, 1955.

(4) Assn. Off. Agric. Chem.: Official Methods of Analysis. 7th ed. Washington, D. C.: Assn. Official Agricultural Chemists, 1950, p. 295.

(5) Wallace, W. M., Holliday, M., Cushman, M., and Elkinton, J. R.: The application of the internal standard flame photometer to the analysis of biologic material. J. Lab. & Clin. Med. 37: 621, 1951.

(6) Kingsley, G. R., and Schaffert, R. R.: Micro flame photometric determination of sodium, potassium, and calcium in serum with organic solvents. J. Biol. Chem. 206: 807, 1954.

(7) Instructions for the Beckman Flame Spectrophotometer. Beckman Instruments, Inc., (South Pasadena, Calif.) Bull. No. 259-A.

Pistachio Nuts

Americans consume from 7 to 10 million lb. pistachio nuts annually. All are imported, and all but 4 to 7 per cent are sold in the shell. Vending machines dispense 12 to 15 nuts for a nickel and account for about 20 per cent of the market; 40 per cent are sold prepackaged, the rest in bulk. Nearly all of the shelled pistachios are used by bakers and ice cream manufacturers.—*From Industrial Bulletin of Arthur D. Little, Inc., No. 329, March, 1956.*

Discoloration of Machine-Peeled Potatoes[1]

KARLA LONGRÉE, Ph.D.

Department of Institution Management, College of Home Economics, Cornell University, Ithaca, New York

A DISCOLORATION of an enzymatic nature is being observed on machine-peeled potatoes when they are held in water prior to cooking. The color of the tubers may become pink, red, or purple. The red hues change to brownish greys after the potatoes are cooked. The discoloration, although restricted to the tuber surface, is unattractive and seriously reduces the eye appeal and sales value of the affected potatoes, since whiteness is one of the most important quality factors of this vegetable.

Enzymatic discoloration, as a consequence of partial heating, has been found in sweet potatoes (1) and beets (2).

After-peeling discoloration of potatoes is different from stem-end discoloration, also known as after-cooking blackening. Stem-end discoloration is bluish and is not apparent until the potatoes have been cooked; it involves the internal tissues of the tuber.

Potatoes prepared for large quantity food service are usually peeled by machine. Most vegetable peelers consist for the main parts of the hopper, a base, and a motor. The hopper is equipped with an abrasive disk which is rotated by the motor. The rotation of the disk keeps the potatoes moving and tumbling, and water is sprayed over the tubers to wash off the peelings.

The purpose of this study was to investigate whether variety of potato and type of peeling equipment have an effect on surface discoloration of potatoes. Such information should be of importance to the manager of quantity food service. It should show whether the discoloration can be reduced, or eliminated, by buying selected varieties or by using proper peeling equipment. On the basis of preliminary studies investigating the effect of kitchen practices on discoloration, no recommendations for eliminating this form of darkening could be made. At present, a chemical dip may be used for the control of after-peeling discoloration in the institution kitchen (3).

Two main studies were planned. Study I was a three-year investigation of the tendency of a number of potato varieties, grown in the state of New York, to discolor after machine peeling. The effect of storage was studied also. Method of peeling (machine vs. hand) was included as a third variable in the second and third years of the study. In a supplementary investigation of the second-year trial, a comparison was made of several varieties grown in two different counties.

Study II was an investigation of effect of peeling equipment on surface discoloration. A variety which was found to discolor readily was selected for this investigation. Variables were: type of peeler, method of harvesting, and storage. Three different mechanical peelers and one hand peeler were used. To test the effect of mode of harvesting, part of the tubers were dug by hand and part by machine.

Procedures

In Study I the varieties used in the first year were: Bliss Triumph, Cobbler, Green Mountain, Katahdin, Kennebec, Ontario, Chippewa, Pontiac, Sebago, and Russet Rural. In the second and third year trials, the last four varieties were omitted.

The potatoes used in the three-year study were grown in Tompkins County and came from the same farm. The potatoes used in a supplementary study came from two counties, Tompkins and Oneida. The history of the potatoes used in the study is given in Table 1.

In Study II tubers of the variety Ontario were used. The potatoes were grown on a farm in Monroe County. The history of the potatoes is also given in Table 1.

In Study I the potatoes were dug by machine. In Study II part of tubers was harvested by hand. Medium tubers were selected for both studies. Careful handling was given the samples at all times.

After harvest, the potatoes were moved to a dark walk-in refrigerator in which a temperature of 36° to 39°F. was maintained. The relative humidity ranged from 74 per cent to 86 per cent, averaging

[1] This is part of a paper presented at the 38th Annual Meeting of the American Dietetic Association in St. Louis, on October 20, 1955.

TABLE 1

History of potatoes used in Study I and Study II

YEAR	COUNTY	PLANTING DATE	HARVESTING DATE	TYPE OF SOIL	MINERAL FERTILIZER		ADDITIONAL INFORMATION
					Type	Amount	
				Study I			
						lb./acre	
1951	Tompkins	May 18	October 17	silt loam	5–10–10	2000	—
1952	Tompkins	May 25	October 1	Wooster gravelly silt loam	5–10–10	2000	plus heavy application of manure
1952	Oneida*	May 25	Mid-October	fine sandy loam	5–10–10	2000	—
1953	Tompkins	May 25	October 13	Lordstown silt loam	5–10–10	1800	—
				Study II			
1951	Monroe	May 25	October 8	Ontario loam	5–10–10	2000	—

* Supplementary study.

approximately 80 per cent. The tubers were held for two to three weeks preceding the fall testing and for three months before the spring tests. Only sound, firm tubers were tested, since flaccid tubers had been found to discolor more severely than firm tubers (4). They were held in a dark room, at 65° to 70°F. for three days before they were peeled.

In Study I, in the first year, two batches of each variety were machine peeled and tested in both the fall and spring. In the second and third years, when the number of varieties had been reduced from ten to six, the same procedure was followed, except that the two samples of each variety were also hand-peeled fall and spring in addition to the machine-peeling tests. For the supplementary study, in the second year, only machine peeling was tested.

In Study I, a vegetable peeler equipped with a ⅓-H.P. motor and a carborundum disk 15 in. in diameter was used. The inside of the hopper was ribbed vertically. The capacity of the peeler was 25 lb. Peeling time was 3 min. for 10 lb. potatoes. For the hand-peeled tubers, a floating blade hand-peeler was used.

The same pattern for the experimental batches was followed in Study II as for the second and third years of Study I, namely that for both the hand-dug and machine-dug samples, hand-peeling and machine-peeling were tested using two batches for each test. In Study II, three types of mechanical peelers were used instead of just one as in Study I, thus providing four tests, each of which was done twice. Peeler No. 1 was the one used in Study I and described above. Peeler No. 2 was fabricated by the same manufacturers and was similar in general construction and mode of operation, but was a more recent model than Peeler No. 1. The vertical ribs inside of the hopper wall of Peeler No. 2 were made of synthetic rubber. Peeler No. 2 was included with the thought that the rubber lining might reduce bruising of the tubers. Peeler No. 3 worked on a different principle in that the potatoes were peeled while totally immersed in water. The tubers were rather gently rolled against an abrasive disk, 8 in. in diameter which was turned by a ⅙ H.P. motor. The capacity of the peeler was 10 lb. The potatoes were peeled in 10-lb. batches.

Peeling time was 3 min. for Peelers No. 1 and 2, and 2½ min. for Peeler No. 3. In preliminary tests it had been found that shorter peeling time needed to be used for Peeler No. 3 in order to achieve approximately equal peeling waste in the three peelers.

Hand-peeled potatoes were prepared as described under Study I.

PREPARATION OF SAMPLES

In both studies, the peeled tubers were immediately placed in water. Two persons eyed and halved them lengthwise. One half of each tuber was saved and the other discarded. It was thus possible to increase the number of tubers in a sample of given weight. A sufficient number of halves were used to make up a 1000-gm. sample which was placed in a 2000-ml. glass beaker. From fifteen to nineteen halves were contained in one sample. The halves were arranged in the beakers with the vertical axis parallel to the sidewall of the container. In preliminary tests it had been found that for reproducible color readings it was necessary to adhere to a certain scheme of tuber arrangement. Near the surface of the water, the conditions for discoloration were most favorable and discoloration was increasingly less as the distance from the surface increased. It was also observed that only the surface tissues of the tubers became discolored and that the internal tissues exposed by the cut surface did not discolor. It was therefore important that the proportion of outside and inside tissues was comparable among the samples.

Tap water of 11° to 12°C. was used to cover the tuber halves to a depth of 3 to 4½ cm. In previous tests (4) it was found that the depth of water coverage affected discoloration. The peeled potatoes were held in water in a refrigerator at a temperature of

TABLE 2

Average color ratings for machine-peeled potatoes, both raw and cooked (Study I)

VARIETY	COLOR RATINGS							
	Before storage				After storage			
	Visual score (raw tubers)*	Hunter values (cooked tubers)			Visual score (raw tubers)*	Hunter values (cooked tubers)		
		Rd	−a	+b		Rd	−a	+b
First Year								
Bliss Triumph	2	53.3	4.6	18.9	2	49.5	3.6	17.6
Ontario	8	36.9	2.6	17.1	12	29.5	1.3	14.5
Kennebec	3	53.4	3.7	19.9	9	46.1	2.5	16.9
Green Mountain	5	49.8	3.2	18.6	8	49.4	2.6	18.5
Katahdin	7	47.1	3.0	17.1	9	42.8	2.6	15.8
Cobbler	2	47.6	3.6	19.1	5	49.5	3.0	19.8
Pontiac	2	52.6	4.0	18.4	6	49.3	2.9	17.8
Chippewa	3	52.0	4.0	17.5	7	47.2	2.7	15.5
Russet Rural	3	50.5	4.0	20.5	7	47.2	2.9	18.5
Sebago	5	46.1	3.4	18.1	10	46.1	2.5	17.5
Second Year								
Bliss Triumph	2	53.8	3.5	17.1	2	49.4	3.3	18.6
Ontario	12	35.5	1.7	16.1	12	31.4	1.8	15.9
Kennebec	6	45.7	2.0	16.1	8	40.7	2.1	16.8
Green Mountain	7	50.1	2.6	18.8	6	50.3	3.2	20.4
Katahdin	12	41.7	1.9	16.0	10	38.3	2.0	16.1
Cobbler	4	48.2	3.1	18.9	6	44.9	2.8	19.5
Third Year								
Bliss Triumph	2	48.7	3.6	17.3	2	48.7	3.3	17.9
Ontario	9	32.7	2.4	13.0	12	31.8	2.1	14.6
Kennebec	6	45.3	3.1	14.9	8	46.0	2.6	15.6
Green Mountain	5	42.2	3.1	16.4	10	41.6	2.4	16.1
Katahdin	7	41.3	2.8	13.7	10	37.5	2.1	13.5
Cobbler	4	49.2	3.4	17.4	8	43.6	2.9	17.0

* From no discoloration (score of 2) to severe discoloration (score of 12).

TABLE 3

Average color ratings for hand-peeled potatoes, both raw and cooked (Study I)

VARIETY	COLOR RATINGS							
	Before storage				After storage			
	Visual score (raw tubers)*	Hunter values (cooked tubers)			Visual score (raw tubers)*	Hunter values (cooked tubers)		
		Rd	−a	+b		Rd	−a	+b
Second Year								
Bliss Triumph	2	55.7	3.4	20.3	2	51.8	3.4	21.7
Ontario	2	49.3	3.9	25.3	2	44.2	3.3	24.8
Kennebec	2	55.2	4.0	24.8	2	55.0	3.1	25.4
Green Mountain	2	57.0	3.7	25.1	2	49.6	3.5	25.3
Katahdin	2	57.0	3.7	24.4	2	52.8	3.1	24.3
Cobbler	2	58.7	3.4	21.9	2	51.4	2.9	25.1
Third Year								
Bliss Triumph	2	52.7	3.4	21.2	2	50.1	3.2	22.2
Ontario	2	40.8	4.2	20.5	2	47.0	3.4	22.0
Kennebec	2	51.6	3.5	20.8	2	53.2	3.3	20.9
Green Mountain	2	52.1	3.6	21.7	2	52.0	3.1	21.0
Katahdin	2	51.2	3.6	20.1	2	53.2	3.4	20.8
Cobbler	2	47.6	3.4	19.2	2	52.3	2.9	22.9

* From no discoloration (score of 2) to severe discoloration (score of 12).

42° to 44°F. for a 20- to 24-hr. period after the peeling; they were then inspected for degree of discoloration. Visual color scores were assigned.

The tubers were steamed until the internal temperature in the center reached 96° to 97°C. A 2½- to 3-mm. layer of surface tissue was removed from the outside portion of each cooked tuber with a wire cheese cutter, roller type. Since, in preliminary tests, it was found that the reproducibility of color readings was much better for mashed samples than for whole tubers or unmashed scrapings, the scrapings were mashed with a fork and mixed well. The mixture was cooled over ice to 25°C., preliminary tests having shown that color readings of the samples tended to change as they cooled to room temperature.

The remainder of the tuber halves was saved and observed for signs of stem-end discoloration.

From the mashed scrapings, two 50-gm. samples were weighed and shaped into two patties (7.7 cm. in diameter and 1.3 cm. thick). The patties were covered on both sides with Cellophane. It was essential that the surface of the patties be very smooth and that the Cellophane sheets fitted snugly. Condensation of moisture on the covers caused variation in the reflectance values of the samples on the Hunter Color Difference Meter (5) on which the samples were checked for color.

VISUAL COLOR SCORES (RAW SAMPLES)

Before the tuber halves were steamed, the samples were grouped into six color classes. Groupings were based on the color of the tubers within the top layer of halves. Classes were designated as follows: no visible discoloration, 2; slight pink, 4; pink, 6; red, 8; purplish, 10; purple, 12.

COLOR REFLECTANCE MEASUREMENTS

Color measurements were made on the patties prepared from the 50-gm. sample of mashed scrapings removed from the outside portion of the freshly-cooked tuber. The Hunter Color Difference Meter was used with large illumination; a circular area of potato patty, 5.7 cm. in diameter, was exposed to the light.

With this instrument, color is measured directly by reflectors. *Rd* values denote lightness; $+a$ readings, redness; $-a$ readings, greenness; $+b$ readings, yellowness; and $-b$ readings blueness.

The standard tile which was used for the setting of the instrument carried the values: $Rd = 39.0$; $a = -1.1$; and $b = -3.3$. All measurements were made on each side of the two patties; therefore, four

readings each of *Rd*, $-a$, and $+b$ were taken of each experimental batch.

Results and Discussion

VARIETY, STORAGE, AND PEELING METHOD

The average visual color scores of raw, machine-peeled tubers and the reflected color values (Hunter) of the cooked tubers in Study I are given in Table 2. In Table 3 are presented the reflected color values of hand-peeled, cooked tubers (Trials 2 and 3, Study I). In Table 4 the varieties are grouped on the basis of $-a$ values of machine-peeled potatoes.

TABLE 4

Varieties grouped on the basis of average $-a$ Hunter readings of the machine-peeled, cooked tubers (Study I)*

READING OF 4.0 OR HIGHER	READING OF 3.99 TO 3.0	READING OF 2.99 TO 2.0	READING LOWER THAN 2.0
First Year			
Bliss Triumph	Russet Rural Pontiac Chippewa Cobbler Kennebec	Sebago Green Mountain Katahdin	Ontario
Second Year			
	Bliss Triumph	Cobbler Green Mountain Kennebec	Katahdin Ontario
Third Year			
	Bliss Triumph Cobbler	Kennebec Green Mountain Katahdin Ontario	

* Listed in order of decreasing values.

In the machine-peeled, cooked potatoes, the Hunter values of *Rd*, $-a$, and $+b$ were correlated with visual scoring of the raw tubers; coefficients of correlation (r) were: -0.79, -0.87, and -0.57 respectively and were highly significant, statistically. In tubers without visual discoloration, the values for lightness, greenness (absence of redness), and yellowness (absence of blueness) were highest. The visual scores correlated best with the $-a$ values. Clark and Moyer (2) reported that in the surface darkening of beets the greenness-redness values a_L (Hunter) correlated well with visual scoring.

On the basis of visual scores, raw machine-peeled tubers of Bliss Triumph did not discolor before cooking; highest $-a$ values were found in that variety. Ontarios, when machine-peeled, were rated darkest when raw and had the lowest $-a$ values after cooking.

The analysis of variance between treatments was based on the measurements for $-a$ only. Differences between varieties were highly significant. Storage differences were highly significant, also; after storage, $-a$ decreased. Differences between machine-peeling and hand-peeling were highly significant; in the hand-peeled tubers, $-a$ values were higher. The interaction variety $\times$ peeling method was highly significant, indicating that the varieties reacted differently to the two peeling methods. There was no difference between years. The third order interaction year $\times$ peeling method $\times$ storage was highly significant.

Differences between two counties (supplementary test in second year) were statistically non-significant.

EFFECT OF PEELING EQUIPMENT

Average visual scores of raw, peeled tubers of the Ontario variety in Study II and reflected color values of the cooked tubers are given in Table 5.

TABLE 5

Average color ratings of hand-peeled and machine-peeled, raw and cooked tubers (Study II)

TYPE OF PEELING EQUIPMENT	HARVESTING METHOD	COLOR RATINGS							
		Before storage				After storage			
		Visual score (raw tubers)*	Hunter values (cooked tubers)			Visual score (raw tubers)*	Hunter values (cooked tubers)		
			Rd	−a	+b		Rd	−a	+b
Hand-Peeled Tubers									
Floating-blade hand-peeler	hand-dug	2	48.7	4.5	22.4	2	47.3	3.1	21.7
Floating-blade hand-peeler	machine-dug	2	50.7	4.5	24.7	2	47.4	3.1	22.4
Machine-Peeled Tubers									
Peeler No. 1	hand-dug	10	41.1	3.0	17.3	10	34.0	2.1	13.7
	machine-dug	6	42.6	3.4	20.9	9	34.6	2.0	16.3
Peeler No. 2	hand-dug	10	37.0	3.1	15.5	11	31.1	1.8	13.2
	machine-dug	9	40.1	3.3	18.2	12	29.6	1.6	13.1
Peeler No. 3	hand-dug	2	48.7	4.7	21.8	5	43.8	2.8	17.9
	machine-dug	2	49.5	4.2	23.0	4	42.5	2.8	19.4

* From no discoloration (score of 2) to severe discoloration (score of 12).

The difference between peelers was highly significant. The mean $-a$ value for hand-peeled tubers was highest, followed by that for tubers peeled in Peeler No. 3.

The difference between hand-harvested and machine-harvested potatoes was not significant; the mean $-a$ values were very similar.

There was a significant difference between $-a$ readings taken before and after storage.

Evaluation

In evaluating the results of Study I, the question arises which varieties yielded machine-peeled, cooked tubers of acceptable color. In steamed potatoes, served plain or buttered, even slight darkening affects appearance considerably. By serving the potatoes with a sauce, the discoloration can be more or less concealed, depending on the viscosity and color of the sauce. In mashed potatoes, the final product might or might not be acceptable, depending on two factors: the degree and extent of discoloration and the texture of the tubers. In this study, it was observed that in potatoes of firm texture, the outer portion was resistant to complete mashing, and the final product had a speckled appearance which was unattractive, even when discoloration was moderate. It seems that potatoes should show no discoloration if they are to be acceptable for the many different uses of quantity food service.

On the basis of the results of Study I, the effectiveness of eliminating after-peeling discoloration by buying potatoes by variety is questionable. Of the varieties included in this somewhat limited study, Bliss Triumph was the only one which consistently failed to discolor with machine-peeling.

An evaluation of the results of the study on the effect of peeling equipment (Study II) seems to point toward the feasibility of controlling discoloration by using equipment which eliminates bruising during peeling.

Summary

A surface discoloration of potatoes, enzymatic in nature, is being observed in machine-peeled potatoes when they are held in water prior to cooking. This study was conducted to investigate whether variety, method of peeling, type of peeling equipment, and storage had an effect on the surface discoloration.

Variety had a significant effect on surface discoloration of machine-peeled potatoes. In a three-year trial, tubers of Bliss Triumph variety did not discolor while Ontarios discolored most severely. Discoloration was increased after a storage period of three months. Hand-peeled potatoes of the ten varieties studied did not discolor.

Of three mechanical peelers tested, a peeler in which the potatoes were abraded while floating in water did not seem to bruise the tubers of the variety Ontario sufficiently to bring about discoloration; the color of the potatoes thus peeled was similar to that of the hand-peeled controls.

REFERENCES

(1) Scott, L., Appleman, C. O., and Wilson, M.: The Discloration of Sweet Potatoes during Preparation for Processing and the Oxidase in the Root. Univ. of Md. Agric. Exper. Sta. Bull. No. A-33 (Tech.) Oct., 1944.

(2) Clark, W. L., and Moyer, J. C.: The surface darkening of sliced beets. Food Tech. 9: 308, 1955.

(3) Longrée, K.: How can you prevent after-peeling discoloration of potatoes.? Hosp. Management 77: 76 (June), 1954.

(4) Longrée, K.: Factors affecting the determination of surface color of peeled potatoes. Am. Pot. J. 29: 273, 1952.

(5) Hunter, R. C.: Photoelectric color-difference meter. J. Optical Soc. Am. 38: 661, 1948.

Relation of Vitamin Needs to Protein Intake

Lowered vitamin requirements may result from low-protein diets—a finding which may mean a change in evaluating diets of underfed people in many parts of the world.

J. N. Williams, Jr., and P. G. Tulpule of the University of Wisconsin, in studying low-protein intake or low-food intake in laboratory animals, have found that lower amounts of certain vitamins were sufficient to maintain tissue concentrations of those vitamins.

An average protein diet with low amounts of vitamin B_6 causes as much loss of this vitamin from body tissues as high-protein diets did. But, when the vitamin was deficient in a low-protein diet, the body tissues lost very little of the vitamin. Thus, people on low-protein diets, such as in some Asian and African countries, may need less of the vitamin than those who eat high-protein diets, as in some European countries and North America.

When the protein level was raised to normal in the animals which were on the diet low in both vitamin B_6 and proteins, the vitamin in the body tissues began to decrease markedly, indicating that any move to improve nutrition among underfed people by increasing protein levels or food intake should also take into account the increased need for particular vitamins.

The essential fatty acids and folic acid were also tested. In many ways, these acted much like vitamin B_6.—*From What's New in Farm Science, Bulletin 518, Agricultural Experiment Station, University of Wisconsin, Jan., 1956.*

Iron Content of Eggs[1]

FRANCES A. JOHNSTON, Ph.D.[2]

New York State College of Home Economics and School of Nutrition, Cornell University, Ithaca, New York

THE iron content of a few samples of eggs, determined in this laboratory incidental to other studies, proved to be lower than that reported in the most widely used tables of food composition. Because eggs are an important source of iron in the American diet, a decision was made to determine the iron content of enough eggs to find whether the average egg contains less iron than the amount now being attributed to it.

Review of the Literature

Several studies of the iron content of eggs were found in the literature. In most of them values were reported for egg yolk only. To compare the studies with one another, with the value listed in the Agriculture Handbook No. 8 (1), and with our results, the values have been converted to milligrams of iron in 100 gm. fresh shelled whole eggs. To do this, the weight of the yolk was considered as 33.3 per cent of the shelled egg. This percentage was the mean for thirty-nine eggs selected to be representative of the eggs used in the present study and is close to the percentage of 33.4 reported by Asmundson (2) for 707 eggs. In calculating values for whole eggs when results were reported for yolks only, whites were considered to contain a negligible amount of iron, a fact confirmed in this study.

The following constitute the results when the reported values are converted to the equivalent for whole eggs as described in the previous paragraph: 2.4 mg. per 100 gm. by Elvehjem *et al.* (3) for 168 eggs from 22 hens of unspecified breed; 2.2 mg. by Cunningham (4) for 152 eggs, 140 of which were laid by 10 hens of unspecified breed; 2.5 mg. by Erikson *et al.* (5) for 383 eggs laid by 125 White Leghorn pullets, all of which had been supplied with a source of vitamin D; 1.91 mg. by Schaible *et al.* (6) for 147 samples of eggs laid by hens of three breeds; and values similar to 1.91 mg. by Schaible and Bandemer (7). Lesné *et al.* (8) reported the iron content of dried yolks but insufficient data for calculation to whole fresh eggs. The converted values would have been about 0.1 mg. per 100 gm. higher had the weight for yolks and whites of medium size listed in the Agriculture Handbook No. 8 been used in place of the weights used in the present study.

Agriculture Handbook No. 8 lists 2.7 mg. iron per 100 gm. of whole eggs, 7.2 mg. for yolks, and 0.2 mg. for whites. The value for yolks is almost identical with that reported by Erikson *et al.* (5). The latter workers did not analyze egg whites.

Schaible *et al.* (6) believe differences in the iron content of eggs are related to the specific bird which laid them. They found no significant differences due to breed in a study including 24 eggs laid by White Leghorns, 59 by Brown Leghorns, and 64 by Barred Rocks. No one has studied differences due to strain. Three groups of workers—Schaible *et al.* (6), Elvehjem *et al.* (3), and Cunningham (4)—failed to find an increase in the iron content of eggs after the addition of iron salts to the feed. According to Erikson *et al.* (5), eggs laid by birds supplied with vitamin D contain more iron than others.

Experimental Procedure

For the present study, fourteen cartons of a dozen eggs each were purchased on the Ithaca market in different retail stores at widely separated times. All were New York State, Grade A, fresh eggs. Ten cartons contained large eggs averaging 57 gm. or more, and four contained medium-size eggs weighing 50 to 56 gm. This is fairly representative of the proportion of the two sizes sold on the market in New York State. Almost no small eggs reach retail stores. Nothing was known about the breed, age, or feed of the hens which laid the eggs.

Thirty-seven samples of eggs were obtained from the Central New York Random Sample Test Farm which is operated under the supervision of the Department of Poultry Husbandry at Cornell University. The eggs were laid by pullets in the first year of production. They were in pens of fifty birds, divided according to breed and strain; all received the same feed and care. The feed contained

[1] Received for publication January 6, 1955.

[2] The author wishes to thank Dr. Steven C. King, Department of Poultry Husbandry and Animal Genetics, for information and advice helpful in selecting the samples.

amounts of B_{12}, iron, and copper considered adequate at present. The mean weight of the six-egg sample used for analysis fell within the range for large eggs for 33 of the samples and within the range for medium eggs for 4. The 37 samples included 23 from eight strains of White Leghorns, 6 from four strains of Rhode Island Reds, 4 from three strains of Barred Rocks, and 4 from four strains of New Hampshires. Three samples of large eggs of a ninth strain of Leghorns were obtained from local hatcheries. This sampling of breed was fairly representative of the proportion in the United States, where about 60 per cent of the laying chickens are White Leghorns. In this sample, 65 per cent were of that breed.

The eggs from the retail stores were of unknown age when purchased. Within 48 hr. weights were taken both in and out of the shell. The eggs from the Random Sample Farm were obtained on the day they were laid, were kept in covered cardboard egg-boxes in a refrigerator, and within 48 hr. were weighed. On standing, eggs lose moisture; consequently the percentage of iron in 100 gm. increases.

The question as to whether whites contain enough iron so that whites and yolks should be analyzed separately was attacked by making a few studies on whites. Samples of egg white from single eggs were dry-ashed in platinum dishes with the use of magnesium chloride and filter paper as described by Bandemer *et al.* (9), and iron was determined by a modification of the orthophenanthroline method of Saywell and Cunningham (10). The amount of iron in the magnesium chloride was negligible, but since the two sheets of No. 44 Whatman Filter Paper used in the analyses contributed about two-thirds of the total iron in the sample, correction for the iron in them was important. The mean iron content per 100 gm. egg white for two samples each of Weidner Strain Leghorns, Brender Strain Leghorns, Rhode Island Reds, and Barred Rocks were 0.034, 0.023, 0.027, and 0.028 mg. respectively. This quantity was so small as to be considered negligible. This was less than the amount of iron found by Schaible *et al.* (7); they reported a mean of 0.073 mg. per 100 mg. for twenty-four samples of White Leghorn eggs. The decision was made to analyze whole eggs and assume that the white contained a negligible amount of iron.

Six eggs selected at random from a dozen purchased at a retail store, or six eggs selected at random from the thirty to thirty-five eggs collected per pen at the Random Sample Farm, were combined into composites. The white was scraped from the inside of the shell with a small rubber spatula. Any eggs containing blood or meat spots were discarded. The eggs were mixed in a mechanical blender. The resulting slurry was transferred to a beaker, hydrochloric acid added, and the beaker placed on a steam bath until the slurry turned brown. Twenty-five-ml. aliquots were ashed with nitric and sulphuric acid and the nitrosyl sulphuric acid broken down by the method of Roberts, Beardsley, and Taylor (11). Iron was determined by the thiocyanate method of Stugart (12). The intensity of color was measured in an Evelyn colorimeter.

TABLE 1

Iron content of whole eggs, determined in six-egg composites

SOURCE	BREED	STRAINS	COMPOSITES	SIZE IN SHELL		IRON CONTENT	
				Large	Medium	Mean	Range
						mg./100 gm.	*mg./100 gm.*
Groceries	unknown	unknown	14	10	4	2.09	1.76–2.44
N.Y.T.F.*	Rhode Island Red	4†	6	6	0	1.95	1.70–2.44
N.Y.T.F.*	Barred Rock	3‡	4	2	2	2.35	2.30–2.38
N.Y.T.F.*	New Hampshire	4§	4	2	2	2.20	1.94–2.46
N.Y.T.F.*	White Leghorn	9¶	26	26	0	2.01	1.74–2.32
Mean....						2.06	

* Central New York Random Sample Test Farm.

† Harco, Schaible, Parmenter, and Warren.

‡ Parks, Rubenzahl, and Frizell.

§ West Hill, Vancrest, Flying Feather, and Hanks Henery.

¶ Anthony, Babcock, Brender, Bulkley, Burr, Heisdorf and Nelson, Honegger, Rich, and Weidner.

Results

The mean iron content of the 14 six-egg samples selected at random from retail stores in Ithaca, was 2.09 mg. per 100 gm.; the range was 1.76 to 2.44 mg. (Table 1). The mean iron content of 54 samples representing 324 eggs from retail stores and from the Central New York Random Sample Test Farm and local hatcheries was 2.06 mg. per 100 gm. (Table 1). These values are close to those found by Schaible and associates (6, 7, 9), whose extensive studies are the most recent, and by Cunningham (4). The values are a little lower than those reported by three other investigators and considerably lower than the one of 2.7 mg. listed in the Agriculture Handbook No. 8.

The mean iron content of eight samples of egg white was 0.028 mg. per 100 gm., an amount so small as to be negligible.

REFERENCES

(1) Watt, B. K., and Merrill, A. L.: Composition of Foods—Raw, Processed, Prepared. U.S.D.A. Agriculture Handbook No. 8, 1950.

(2) Asmundson, V. S.: The formation of the hen's egg. Parts 2 and 3. Sci. Agric. 11: 662, 680, 1931.

(3) ELVEHJEM, C. A., KEMMERER, A. R., HART, E. B., AND HALPIN, J. G.: The effect of the diet of the hen on the iron and copper content of the egg. J. Biol. Chem. 85: 89, 1929.

(4) CUNNINGHAM, I. J.: Some biochemical and physiological aspects of copper in animal nutrition. Biochem. J. 25 (2): 1267, 1931.

(5) ERIKSON, S. E., BOYDEN, R. E., MARTIN, J. H., AND INSKO, W. M., JR.: The iron and copper content of egg yolk. Ky. Agric. Exper. Sta. Res. Bull. No. 342, June, 1933.

(6) SCHAIBLE, P. J., DAVIDSON, J. A., AND BANDEMER, S. L.: The iron content of whites and yolks of eggs from hens fed various iron supplements. Poultry Sci. 23: 441, 1944.

(7) SCHAIBLE, P. J., AND BANDEMER, S. L.: Composition of fresh and storage eggs from hens fed cottonseed and non-cottonseed rations. 3. Iron content. Poultry Sci. 25: 451, 1946.

(8) LESNÉ, E., ZIZINE, P., AND BRISKAS, S.: Le taux du fer et du cuivre dans l'oeuf; les variations de ces deux métaux suivant l'age de la poule. C. R. Soc. Biol. 128: 935, 1938.

(9) BANDEMER, S. L., DAVIDSON, J. A., AND SCHAIBLE, P. J.: Ashing of egg whites and yolks and the determination of their iron content. Poultry Sci. 23: 437, 1944.

(10) SAYWELL, L. G., AND CUNNINGHAM, B. B.: Determination of iron: Colorimetric o-phenanthroline method. Indust. & Eng. Chem., Anal. Ed. 9: 67, 1937.

(11) ROBERTS, H. L., BEARDSLEY, C. L., AND TAYLOR, L. V., JR.: Determination of iron in liquid food products. Indust. & Eng. Chem., Anal. Ed. 12: 365, 1940.

(12) STUGART, R.: Determination of iron in milk and other biological materials. Indust. & Eng. Chem., Anal. Ed. 3: 390, 1931.

50th Anniversary of Food and Drug Laws

This year marks the fiftieth anniversary of the successful twenty-three-year crusade by Dr. Harvey W. Wiley to secure a federal law which would curb the sale of contaminated foods and harmful drugs. On June 30, 1906, President Theodore Roosevelt signed into law the first Food, Drug, and Cosmetic Act.

To commemorate this milestone in our history, the Smithsonian Institution in Washington, D. C. has prepared a special exhibit in the gallery of medical history, highlighting the story of Dr. Wiley's successful campaign. Dr. Wiley came from Purdue University in 1883 to be Chief of the Bureau of Chemistry of the U. S. Department of Agriculture. One of his first official acts was to assign several chemists to study food adulteration. Their work was reported in the Bureau's famous "Bulletin 13," a 1400-page document issued in ten parts, covering fifteen years of research. This scientific indictment was the basis of Dr. Wiley's case for a federal pure-food law.

This period was the heyday of the "patent medicines." Typical products, shown in the exhibit, carried extravagant claims of effectiveness for every disease known to man. Labels gave no hint of the presence of dangerous or habit-forming ingredients; warnings against excessive use or misuse were unheard of; and ineffective products were labeled as sure cures for the most serious conditions.

In 1903, Dr. Wiley opened what became the world's most famous "boarding house." Officially, it was known as the "hygienic table" but popularly it was described as the "Poison Squad." Young men volunteered to eat all their meals at a dining room in the Bureau's Washington headquarters where they were served food containing measured amounts of chemical preservatives then in use. Medical records were kept of the reactions and symptoms of the human guinea pigs. These records, with pictures of the "Squad" and Wiley's original balance (used to weigh the chemicals) are included in the Smithsonian exhibit, along with cartoons and magazine articles by crusading journalists who joined the campaign.

In 1938, a new Federal Food, Drug, and Cosmetic Act brought about improvements in the law, providing for: the establishment of official standards for food products, proof that new drugs are safe before they are put on sale to the public; and proof that medical devices and cosmetics are safe and bear truthful labels with warnings against misuse. Displays of the laws themselves as well as packages illustrating legal requirements are included in the Smithsonian exhibit.

Another section of the exhibit demonstrates how the Food and Drug Administration protects the consumer today. Special tools used by food and drug inspectors for sampling various products, including equipment for detecting filth-contaminated foods by ultraviolet light and portable scales used to check the net weight of packaged products, are on display. Packages also illustrate how containers are affected by atomic blast and heat and flood.

Nutritional Improvement of Rice[1]

MARINUS C. KIK, Ph.D.

Department of Agricultural Chemistry, University of Arkansas, Fayetteville

IN RECENT studies concerning improvement of rice diets, a diet containing 90 per cent milled rice was markedly improved by the addition of lysine and threonine (1). Sure has recently found an additional supplementary value of methionine to the proteins in milled rice in the presence of lysine and threonine (2).

This paper reports results of growth and metabolism experiments with young rats fed diets composed of whole, milled, and enriched milled rice with and without supplements of lysine, threonine, and vitamin B_{12}. Results are also presented of studies on the content of all members of the B-complex, amino acids (including non essentials), calcium, phosphorous, and iron (total and available) in whole rice and perch. Included is a study of the supplementary value of proteins of fish (perch) to those of milled rice.

Experimental Procedure and Results

A complete description of the experimental procedure for the testing of amino acids, vitamins, and minerals and for the determination of the biologic value of the proteins is presented in previous papers (3-5). Albino rats were fed whole and milled rice[2] rations containing 5.59 per cent protein, with and without 0.2 per cent L-lysine, 0.2 per cent DL-threonine,[3] and 0.1 mcg. vitamin B_{12} daily. The protein content of whole rice was 7.01 per cent, that of milled rice 6.24 per cent.

Dried ocean perch fillets[4] were used in the ration for the supplementary study. This fish meal was obtained by cutting fresh fillets, grinding in a meal chopper, and drying in a warm air tunnel at a temperature below 50°C. The dried fish meal contained 78.5 per cent protein and 7.83 per cent fat. The ration contained 5.27 per cent protein and an equivalent amount of the proteins of milled rice was replaced by 1, 3, and 5 per cent perch proteins, keeping the total protein content at 5.27 per cent by varying the rice content. (Rations 10, 11, 12). In Ration 13, all proteins of milled rice were replaced by those of perch; in Ration 14, 9 per cent perch proteins are fed. The composition of the rest of the ration and the procedure for the care of the experimental animals have been previously described (4).

Results of the growth and supplementary experiments are given in Table 1 and those of the metabolism experiments in Table 2. From the gains in body weight per gram protein intake, the protein efficiency ratios were calculated. The results, expressed as average gain per animal and summarized in Table 1, indicate that the proteins of whole rice and milled rice can be improved by supplementation with lysine, threonine, and vitamin B_{12}, and those of enriched milled rice by supplementation with lysine and threonine. Addition of 0.2 per cent L-lysine and 0.2 per cent DL-threonine produced an average gain of 117.2 gm, and a protein efficiency ratio (P.E.R.) of 2.61 gm, in rations containing 5.59 per cent whole rice protein (Ration 2, Table 1) and an average increase of 46.5 per cent in gain and a 37.7 per cent increase in P.E.R. Daily addition of 0.1 mcg. vitamin B_{12} further increased the gain to 58.7 per cent and the P.E.R. to 46.0 per cent. Animals fed milled rice protein at a 5.59 per cent level showed increased gain of 92 per cent and an increase of 70 per cent in P.E.R. with supplements of 0.2 per cent L-lysine and 0.2 per cent DL-threonine. Further daily supplementation with 0.1 mcg. vitamin B_{12} produced an increase in gain up to 115.4 per cent and an increase in P.E.R. up to 81.1 per cent (Table 1, Rations 5 and 6). The addition of 0.2 per cent L-lysine and 0.2 per cent DL-threonine to a ration containing enriched milled rice at a 5.59 per cent protein level showed increased gain in weight of 150 per cent and an increased P.E.R. of 82.4 per cent (Table 1, Ration 8). These differences in gain in body weight and in P.E.R. were tested statistically and found to be significant for $P = 0.05$.

These results indicate that the proteins of commercial whole rice and milled rice can be further

[1] Published with the approval of the Director, Arkansas Agricultural Experiment Station. Received for publication February 6, 1956.

[2] Commercial samples of whole and milled rice were made available through the courtesy of the Arkansas Rice Growers Cooperative Association, Stuttgart, Arkansas.

[3] Supplied by Merck and Co., Inc.

[4] Supplied by Gorton-Pew Fisheries Company, Ltd., Gloucester, Massachusetts

improved by supplementation with lysine, threonine, and vitamin B_{12}, and those of enriched milled rice by supplementation with lysine and threonine.

Table 1 also indicates that when 1, 3, and 5 per cent perch replaced an equivalent amount of protein of milled rice, increases in body weight of 111.1, 111.1, and 100 per cent and 52.9, 65.7, and 49.4 per cent in P.E.R. respectively were obtained in animals fed milled rice and milled rice-fish rations at 5.27 per cent protein level (Table 1, Rations 10, 11, and 12). The reason the supplementation of 5 per cent perch proteins proved poorer than 1 and 3 per cent may possibly be due to an amino acid inbalance (6). An increase of 123.3 per cent in growth and 55.3 per cent in P.E.R. was found in animals fed Ration 13 containing 5.27 per cent protein derived from fish alone, indicating that perch has better nutritive value than milled rice at that level of protein intake. These differences were tested statistically and found to be significant for P = 0.05. Animals

TABLE 1

Relative efficiency of protein in whole, milled, and enriched rice with and without supplements†

RATION NUMBER	COMPOSITION OF RATION	GROWTH GAINS		PROTEIN INTAKE	PROTEIN IN RATION	PROTEIN EFFICIENCY RATIO	
		Weight	Proportion			Weight	Increase
		gm.	%	*gm.*	%	*gm.*	%
1	whole rice	80.0		41.7	5.59	1.91 ± 0.05§	
2	whole rice + 0.2% L-lysine + 0.2% DL-threonine	117.2	46.5*	44.5	5.59	2.63 ± 0.08	37.7*
3	whole rice + 0.2% L-lysine + 0.2% DL-threonine + 0.1 mcg. B_{12}	127.0	58.7*	45.5	5.59	2.79 ± 0.01	46.0*
4	milled rice	59.4		36.2	5.59	1.65 ± 0.06	
5	milled rice + 0.2% L-lysine + 0.2% DL-threonine	114.0	92.0*	41.0	5.59	2.78 ± 0.08	70.0*
6	milled rice + 0.2% L-Lysine + 0.2% DL-threonine + 0.1 mcg. B_{12}	128.0	115.4*	43.1	5.59	2.97 ± 0.08	81.1*
7	enriched milled rice‖	53.5		31.2	5.59	1.71 ± 0.07	
8	enriched milled rice + 0.2% L-lysine + 0.2% DL-threonine	134.0	150.0	42.9	5.59	3.12 ± 0.05	82.4*
9	milled rice	54.0		31.3	5.27	1.72 ± 0.10	
10	milled rice + 1% perch	114.0	111.1*	43.4	5.27	2.63 ± 0.06	52.9*
11	milled rice + 3% perch	114.0	111.1*	39.9	5.27	2.85 ± 0.12	65.7*
12	milled rice + 5% perch	108.0	100.0*	42.0	5.27	2.57 ± 0.10	49.4*
13	7% perch	120.7	123.5*	45.0	5.27	2.68 ± 0.12	55.8*
14	11.4% perch	183.0		82.9	9.00	2.20 ± 0.09	

* Significant for P = 0.05.

† Experimental period of 10 weeks; 6 males and 6 females on each ration, except 9 males and 9 females on Rations 5 and 6, 12 males and 12 females on Rations 7 and 8. Average results per animals.

‡ Gains in body weight per gram of protein intake.

§ Standard deviation of mean.

‖ Enriched milled rice is milled rice fortified with an enrichment premix added at a ratio of 199:1. Each gram of enriched milled rice provides 4.4 mcg. thiamine, 35.5 mcg. niacin, and 29 mcg. iron.

TABLE 2

Biologic value of whole, milled, and enriched milled rice with and without supplementation†

RATION NUMBER	COMPOSITION OF RATION	BIOLOGIC VALUE‡	TRUE DIGESTIBILITY VALUE§	NET UTILIZATION‖	INCREASE
		%	%	%	%
1	whole rice	89.4 ± 1.9¶	94.7 ± 0.40	84.6	
2	whole rice + 0.2% L-lysine + 0.2% DL-threonine	98.1 ± 1.3	92.2 ± 0.35	90.4	6.8*
3	milled rice	61.4 ± 1.7	96.9 ± 0.70	59.5	
4	milled rice + 0.2% L-lysine + 0.2% DL-threonine	95.2 ± 0.7	98.1 ± 0.50	93.4	57.0*
5	enriched milled rice	81.7 ± 1.0	94.2 ± 0.45	76.9	
6	enriched milled rice + 0.2% L-lysine + 0.2% DL-threonine	91.7 ± 1.3	93.5 ± 0.24	85.7	11.4*

* Significant for P = 0.05.

† Ad libitum feeding; 12 animals on Rations 1, 2, and 3; 24 animals on Rations 4, 5, and 6. Protein in rations, 5.59 per cent; average results per animal.

‡ Per cent of absorbed nitrogen released in animal body.

§ True coefficient of digestibility obtained by subtracting nitrogen lost in feces from total nitrogen intake and dividing by 100.

‖ Obtained by multiplying true coefficient of digestibility by biologic value and dividing by 100.

¶ Standard deviation of means.

TABLE 3

Amino acid composition of whole rice and perch

AMINO ACID	PERCENT IN WHOLE RICE (7.01% protein)		PERCENT IN PERCH (78.5% protein)	
	In dry matter	In protein	In dry matter	In protein
Arginine*	0.64	9.02	5.7	7.25
Aspartic acid	0.34	4.85	5.0	6.35
Cystine	0.12	1.71	1.1	1.39
Glutamic acid	0.82	11.69	11.5	14.60
Glycine	0.45	6.41	5.1	6.47
Histidine*	0.22	3.13	1.7	2.15
Isoleucine*	0.34	4.84	4.0	5.08
Leucine*	0.56	7.98	5.6	7.11
Lycine*	0.26	3.74	6.4	8.12
Methionine*	0.23	3.27	3.8	4.81
Phenylalanine*	0.31	4.43	3.6	4.57
Proline	0.30	5.27	2.4	3.04
Serine	0.32	4.56	5.0	6.35
Threonine*	0.27	3.85	3.8	4.82
Tryptophan*	0.09	1.28	1.0	1.27
Tyrosine	0.29	4.13	3.0	3.81
Valine*	0.50	7.13	4.9	6.22

* Nutritionally essential for rats.

fed Ration 14 at a 9 per cent perch protein level made an average gain of 183 gm.; the P.E.R. was 2.20 which is less than that at the 5.27 per cent level. This decreased protein efficiency at the higher level can be explained by the greater protein-intake per gram gain of body weight.

Table 2 shows the biologic values and true digestibilities of the proteins of whole, milled, and enriched milled rice, supplemented and unsupplemented with 0.2 per cent L-lysine and 0.2 per cent DL-threonine, as determined by the nitrogen retention method of Mitchell (7). The net utilization values are obtained by multiplying true coefficient of digestibility by biologic value and dividing by 100. The resulting values were higher for the supplemented rice (Rations 2, 4, and 6) than for the unsupplemented rice (Rations 1, 3, and 5). These differences in favor of supplementation amounted to 6.8 per cent for whole rice, 57.0 per cent for milled rice, and 11.4 per cent for enriched milled rice and were significant for $P = 0.05$.

These results indicate that the additions of L-lysine and DL-threonine resulted in smaller losses of the nitrogen during digestion and metabolism, which promoted better growth and better utilization of the protein.

AMINO ACID CONTENT

The results of the amino acid determinations expressed percentage wise, calculated on the air dried samples, and also expressed as the percentage in the crude protein ($N \times 5.95$) are given in Table 3. The proteins in perch were markedly higher in the essential amino acids, lysine, threonine, and methionine, which explains their supplementary value to the proteins in whole, milled, and enriched milled rice. The proteins in perch were also significantly higher in the nonessential amino acids, aspartic, glutamic, and serine.

TABLE 4

Vitamin and proximate composition of whole rice and perch

CONSTITUENTS	WHOLE RICE	PERCH
Thiamine (mcg./gm.)	3.90	1.30
Riboflavin (mcg./gm.)	0.66	1.80
Niacin (mcg./gm.)	41.00	51.00
Pantothenic acid		
Total (mcg./gm.)	15.20	18.90
Free (mcg./gm.)	6.50	10.40
Biotin (mcg./gm.)	0.12	0.30
Folic acid		
Total (mcg./gm.)	0.20	3.00
Free (mcg./gm.)	0.12	1.25
Pyridoxine (mcg./gm.)	6.20	3.50
Inositol (mcg./gm.)	1194.00	1482.00
Choline (mcg./gm.)	1124.00	2577.00
Para-aminobenzioic acid (mg./gm.)	0.30	1.20
Calcium (%)	0.04	0.10
Phosphorus (%)	0.27	0.90
Iron		
Total (%)	0.0027	0.0035
Available (%)	0.0016	0.0011
Nitrogen (%)	1.17	12.60
Protein (%)	7.02 ($N \times 5.95$)	78.70 ($N \times 6.25$)
Fat (%)	2.00	7.83
Moisture (%)	7.50	7.50
Ash (%)	1.10	6.60

A number of vitamins were determined according to methods described by Barton-Wright (8). The results of these tests are given in Table 4, which also contains data on calcium, phosphorus, iron, and other constituents. Perch had a higher content of riboflavin, niacin, free pantothenic acid, biotin, folic acid, inositol, and para-aminobenzoic acid than whole rice, and was also considerably higher in calcium and phosphorus and some in iron.

Summary

The proteins of whole and milled rice were improved by the addition of lysine, threonine, and vitamin B_{12} and those of enriched milled rice by the addition of lysine and threonine. Data are presented on the content of amino acids (essential and nonessential), vitamins, and other constituents of whole rice and perch.

The proteins of perch had a supplementary value for those of milled rice.

REFERENCES

(1) PECORA, L. J., AND HUNDLEY, J. M.: Nutritional improvement of white polished rice by the addition of lysine and threonine. J. Nutrition 44: 101, 1951.

(2) SURE, B.: Effect of amino acid and vitamin B_{12} supplements on the biologic value of proteins in rice and wheat. J. Am. Dietet. A. 31: 1232, 1955.

(3) KIK, M. C.: Nutritive value of rice germ. J. Agric. & Food Chem. 2: 1179, 1954.
(4) KIK, M. C.: Nutrients in rice bran and rice polish and improvement of protein quality with amino acids. J. Agric. & Food Chem. 4: 170, 1956.
(5) KIK, M. C.: Influence of processing on nutritive value of milled rice. J. Agric. & Food Chem. 3: 600, 1955.
(6) DESHPANDE, P. D., HARPER, A. E., QUIROS-PEREZ, F., AND ELVEHJEM, C. A.: Further observations on the improvement of polished rice with protein and amino acid supplements. J. Nutrition 57: 415, 1955.
(7) MITCHELL, H. H.: Determination of the nutritive value of the proteins of food products. Indust. & Eng. Chem., Anal. Ed. 16: 696, 1944.
(8) BARTON-WRIGHT, E. C.: The Microbiological Assay of the Vitamin B-Complex and Amino Acids. N. Y.: Pitman Publishing Corp., 1952.

BIOGRAPHICAL NOTES FROM THE HISTORY OF NUTRITION

William Cadogan—1711–February 26, 1797

On the ever unrolling canvas of history of science, men through the centuries have added their contributions to the total pattern. Some have worked in broad areas, some have completely changed the design, and some have painstakingly filled in with careful detail the broader design started by some other hand. In the eighteenth century, the chemists Cavendish, Black, Priestley, and Lavoisier were changing the pattern, but nutrition and dietetics found little place.

Casal (1679–1759) described pellagra, John Huxham (1694–1768) advised fresh vegetables and fruit juices for sailors on long voyages to prevent scurvy, and James Lind (1716–1794) gave experimental proof that lemon juice cured scurvy. Outstanding physicians and surgeons there were, but none paid much attention to the care and feeding of children. For this Cadogan is remembered in the historical development. Not a great man or eminent physician, he nevertheless is remembered for two books which he published: *An Essay upon Nursing and the Management of Children from Their Birth to Three Years of Age* (London, 1748) and *A Dissertation on the Gout, and All Chronic Diseases; Jointly Considered as Proceeding from the Same Causes; What Those Causes Are; and a Rational and Natural Method of Cure Proposed. Addressed to All Invalids* (London, 1771).

His book on the care of children was apparently written while he was in private practice in Bristol. He had written a letter to one of the governors of the Foundling Hospital in London giving his views on the care and feeding of children and the governor had passed it on to the General Committee of the Hospital, who were so impressed by it that they requested that it be published. The book went through nine editions in twenty years, but seemed to have little lasting effect because we had to wait until the present century to see Cadogan's ideas become general practice. He advocated the removal of swaddling clothes, believing that they caused more deformities than they cured. He said that feeding was more important than clothing and rejected the current idea that fruits and vegetables were harmful. He recommended that they be included in the diet as soon as the infant could eat bread and butter and a little meat.

His little book on gout was written in an easy readable style and was very popular; gout was a common disease in that period of intemperance and high living. His proposed treatment was sound: a plain simple diet with one food or at most two at a meal; activity, temperance, and peace of mind. He stated that the disease was not hereditary and was curable, but no pill or medicine would cure it. He discussed intemperance, indolence, and vexation as the causes and specifically mentioned the effect of worry or grief in taking away appetite and stopping digestion. The diet he advocated included eggs and tender meat, salads of lettuce and endive, light puddings, custard, and ripe fruit—with avoidance of sauces, pickles, and wine.

There are few data available about the life of William Cadogan. He was born in 1711 in London and studied at Oriel College, Oxford, where he obtained his bachelor's degree in 1731. He went to Leyden, Holland, to study medicine and received his medical degree in 1737. For a time he served as physician in the army and then entered private practice in Bristol. In 1752, he was made a Fellow of the Royal Society and in 1754 he went to London as physician to the Foundling Hospital; probably his book helped to gain him this appointment. The next year, Oxford granted him the degrees of M.A., M.B., and M.D. In 1758, he was made a member of the College of Physicians and twice was chosen to give the Harveian Oration (1764, 1792). Cadogan lived on Georges Street on Cavendish Square. He was married and had one daughter.

REFERENCES: Dictionary of National Biography. Vol. 8. N. Y.: Macmillan Co., 1886, p. 187; Ruhrah, J.: William Cadogan and His Essay on Gout. Ann. Med. Hist. 7: 64, 1925; Drummond, J. C., and Wilbraham, A.: The Englishman's Food. London: Jonathan Cope, 1939, p. 293.—*Contributed by E. Neige Todhunter, Ph.D., Dean, School of Home Economics, University of Alabama, Tuscaloosa.*

Current Comment

Imaginators at Work[1]

CLARICE D. GULLICKSON

Dietetic Specialist in Administration,
Department of Medicine and Surgery,
Veterans Administration, Washington, D. C.

KENNETH Grahame wrote in *The Golden Age*, "As a rule, grown-up people are fairly correct in matters of fact; it is in the higher gift of imagination that they are so sadly to seek." (1). The time is here for us to service our "imaginators" and get them in the best working order to accept and develop with the well-based predictions of things to come in the era of automation.

Recorded facts tell us that nearly five hundred years ago the study of nature was no longer in the isolated category of philosophy (2, 3), but became a supporter of applied arts and the origin of practical invention. Since then, the progress of Western world economics has gone forward at an ever-accelerated speed with the vying contributions of technologies and scientific discoveries. We realize that the developmental span between pure science and engineering application has unquestionably shortened when we look back over our shoulders. One hundred years of effort were needed to establish the steam engine as a part of the industrial picture; electric power took less than fifty years and the internal combustion engine only thirty; nearly every American home had the vacuum tube within fifteen years of its birth; thus have gone our ever-increasing luxuries of abundant living with the waiting time between research and application growing ever shorter. In comparative time, the predictions of today will be with us tomorrow.

Now, when we read in the magazine section of our Sunday paper "This is Your Future! You'll still be young at 90, live in push button homes, wear air-conditioned clothes, drive jet cars and 'copters, and rocket to Europe in an hour"—we can't say, "I can't imagine that."

Olga Curtis, woman's editor of the Denver *Post* (4), describes the kitchen of 1956 as having: an automatic sink which will measure out and control the temperature of water as well as dry the hands with warm air; a memory machine which will take a coded recipe card, flash a color picture of the food being prepared, then light up buttons for the dry ingredients needed, measure and pour them out.

Many of these probabilities will affect our personal and professional lives. Let us browse awhile among the prospects of the immediate future.

From the engineering standpoint, the era of automatic control has begun. Machines, in many instances, have practically eliminated the need for human muscle power. Man has all but ceased to be a lifter and mover and become primarily a starter and stopper!

A computing machine used in the chemical industry controls the controls in such a way that a chemical reaction can be kept cooking for a predetermined time at a given temperature and then the temperature raised or lowered or some other ingredients added. This computing machine may be made to calculate the time, which might depend, for example, on information derived from observations on the infrared spectrum of a sample of the batch being cooked and fed into the calculating machine by a separate channel. These processes of control can be made more reliable than human beings and probably more economical.

Automation in the Kitchen

We might see the day that a cook will come into the kitchen in the morning, plan his work in accordance with his menu by punching holes with a special typewriter in cards or on a strip of paper, then leave the machinery to work unattended, and have the meal ready at the proper time.

Small runs of different formulas can be handled by a punched card system. Each card, representing a formula and process, carries a product through its specific operations. Automatically controlled are such variables as formula, weight, temperature, and time.

Col. Paul Logan of the National Restaurant Association, has described automation (5) as it applies to the food service industry as:

(a) An operation in a restaurant which has been so planned that it affords a straight-line production from the receiving platform to the dining room with the minimum of cross traffic and the least amount of back haulage;

(b) The placement of equipment through time-motion studies so that employees can work with the greatest of ease and the least amount of traffic;

(c) The adoption of heat control instruments and timing devices of such accuracy as to eliminate all guesswork in the cooking of foods;

(d) The use of mechanized and automatic equipment which will minimize hand handling and particularly load lifting;

[1] Presented before the Maryland Dietetic Association in Baltimore, on February 6, 1956.

Photo courtesy of Seymour Foods, Inc.

Egg-breaking machine in operation

(e) The standardization of the dimensions of utensils and containers so that each container becomes a multi-purpose item, usable on conveyor belts, in refrigerators, ranges, ovens, and serving tables.

Col. Logan has also written that the most precious thing in any institutional kitchen is horizontal space, but to date very little effort has been made by equipment manufacturers to increase the use of vertical space. A blueprint for a standard layout for such a kitchen would be difficult to visualize.

The Equipment Committee working with the Research Department of the National Restaurant Association can foresee smaller, light-weight cooking equipment replacing heavy, over-size ranges and ovens which will soon become obsolete; small-size steam-jacketed trunion kettles; narrow revolving tray ovens which reach up to the ceiling; two-deck hearth ovens of proper working height; and griddles and hot plates with accurate heat controls.

Food Processing Developments

In the field of food processing and handling, a number of notable advances have been made.

Today, process controls in the sausage kitchen (6) enable more consistent formulation than is possible with any human operator. Skill and experience in developing the formula are used just once. From then on, equipment does the work, with controls insuring that the machines adhere to the process. A completely automated sausage kitchen is limited only by lack of a casing that can be fed and stuffed continuously and automatically. When that is developed, sausage manufacture will be completely automated, since automatic means for linking, handling, weighing, and packaging already exist. With proper controls, processing of relatively small quantities of various sausages can be automated as efficiently as large operations where one type is made on each line.

Prof. L. B. Darrah (1), Cornell University poultry marketing specialist who developed the idea of selling shell-less eggs, shows the finished product to Dexter S. Kimball, Jr., of the Cornell Board of Trustees.

In another new operation soon to be unveiled (6), cured pork bellies will be segregated automatically according to weight, transported through an automatic smoke house, next directed into a quick-chill unit. From there they will go to a press and directly to a slicer. Finally, slices will be counted, weighed, and packaged—all automatically. This continuous-process bacon cuts costs about in half.

According to the New York *Times*, annual consumption of frozen foods has risen from 17 lb. per person in 1949 to 45 lb. per person in 1955, with a 10 per cent increase in just the past year, the fastest growing items being the prepared foods. Lendal H. Kotschevar, Director, Residences and Food Services, Montana State University, expects that it will soon be possible for institutions to order frozen foods, such as stews and fricassees, by the pound.

We think of the frozen food industry as being new, but in reading about it, we learn that 40 tons frozen meat arrived in London from Sydney and Melbourne in 1882. By 1949, England imported 900,000 tons frozen meat.

Eggs

An apparatus has been developed for sterilizing the surface of shell eggs (7). Eggs are placed in a conveyor having recessed egg-holding pockets between spaced rollers. The rotating egg is struck by high-temperature beams of ignited gas from nozzles. The interior of the eggs are unaffected since beams extend above eggs on both sides of the treatment point and the time of exposure is short.

The breaking of eggs (8) and separating egg yolks from whites has been, until recently, a tedious manual task defying mechanization. Now this operation can be carried out by machine as demonstrated by a company in Topeka, Kansas, which has a unit that processes twenty-six cases of eggs an hour. The new unit is considered more sanitary, since human hands do not contact the product. A single operator now merely starts and stops the machine and inspects the broken-out eggs. Previously, from six to eight girls were employed for breaking eggs.

Shell-less eggs (9) will also soon appear on the market. Machines drop the eggs into cup-like, clear plastic compartments after breaking the shells. Carbon dioxide is added to the plastic package to maintain quality and the compartments are sealed with film. These eggs may be poached or boiled and served in the container in which they are packaged.

Preserving Methods

The first commercial use of an antibiotic in the processing of a perishable food became possible on an interstate basis on November 30, 1955 (10). On that date, the Food and Drug Administration cleared chlortetracycline (Aureomycin) for use in and on uncooked poultry. This substance retards major bacterial action with fresh killed poultry so that acceptable "in store" freshness can be maintained from two to three weeks. This approval was given on the basis that not more than 7 parts per million of this antibiotic remain on the treated, uncooked poultry. The decision to allow this amount of residue was based on evidence that cooking of poultry destroys this concentration of the antibiotic.

A considerable number of field trials as well as laboratory studies with chlortetracycline have also shown real promise for red meats and fish. Scrod and halibut, caught and iced on boats sailing out of Boston, remained in top quality a week longer than did fish caught at the same time and placed in ordinary ice (11).

Antibiotic treatment could mean vast supplies of cheaper meat for people who do not live near areas where meat-producing animals thrive. Entire new markets for meat products could be opened.

Tests are now under way, also, to determine whether feeding high levels of antibiotics to animals before slaughter will result in increased keeping time. Experimental work has shown that carcasses infused with an antibiotic immediately after slaughter showed no signs of internal spoilage when refrigeration was delayed 48 hr.

Some of the techniques developed by scientists for the preservation of meat are: (a) pasteurization, the process whereby meat is exposed to low doses of gamma rays; (b) sterilization, where more gamma rays are given to sterilize completely the products; (c) freeze-drying, in which the water content is removed from the meat as it is frozen (the meat is then placed in water to absorb the same amount to be ready to cook); and (d) diathermy, in which the meat is heated through by the use of high-frequency electrical oscillations. With this method, a whole boneless ham can be processed in less than 18 min.

Dietitians' Opportunities

Now that we do not just imagine, but know that we are on the brink of the "push-button age," we must not become dismayed and think that only fingers to push the buttons will be needed. We dietitians are engaged in a fast-moving, exciting business. Stretching our budget to do all it should probably makes each of us wish that there were a golden egg-laying goose or an Aladdin's lamp in our storeroom.

To get full benefit from what we spend, to satisfy our clientele, and to meet their nutritional needs, we should continue to evaluate:

Our Planning. Are we replacing our heavy-duty equipment with small equipment having automatic features?

Our Buying. Do we watch the market for good bargains; study grades and yields and check our deliveries against our purchase orders?

Our Food Preparation. Do we cook all foods in small quantities to retain appearance, flavor, and nutritive value, and meat while still frozen or only partially thawed, since studies show that "drip" from thawed frozen meat contains considerable protein, thiamine, riboflavin, and niacin (12, 13)?

Ourselves. Do we keep professionally alert to rapid developments in the food industry, in new management procedures, personnel relations, and applied nutrition? Do we meet our final goal—a satisfied clientele?

REFERENCES

(1) Bartlett, J.: Familiar Quotations. 13th ed. Boston: Little, Brown & Co., 1956, p. 784.

(2) Leontief, W.: The economic impact. *In* Scientific American (periodical): Automatic Control. N. Y.: Simon & Schuster, 1956.

(3) Thomson, Sir G.: The Foreseeable Future. N. Y.: Cambridge Univ. Press, 1955.

(4) Curtis, O.: Denver *Post*, January 23, 1956.

(5) Logan, P.: Automation: what it means to the food service industry. Food Service Mag. 17: 32 (Apr.), 37 (May), 1955.

(6) Meat packers tackle vital issues. Food Engin. 28: 89 (Jan.), 1956.

(7) Recent Inventions. Food Engin. 27: 301 (Dec.), 1955.

(8) Machine breaks eggs—and also a big bottleneck. Food Engin. 27: 83 (Sept.), 1955.

(9) Eggs without shells developed at Cornell. Food Engin. 27: 164 (Dec.), 1955.

(10) Miller, W. H.: Antibiotic introduced as spoilage inhibitor for fresh poultry. Food Engin. 28: 43 (Jan.), 1956.

(11) International Conference on the Use of Antibiotics in Agriculture. Washington *Post*, November 30, 1955.

(12) Pearson, A. M., Burnside, J. E., Edwards, H. M., Glasscock, R. S., Cunha, T. J., and Novak, A. F.: Vitamin losses in drip obtained upon defrosting frozen meat. Food Research 16: 85, 1951.

(13) Kotschevar, L. H.: B-vitamin retention in frozen meat. J. Am. Dietet. A. 31: 589, 1955.

Comparisons of Products Made from Commercial Mixes and from Conventional Formulas[1]

MONICA R. ROLLER

University of Washington
Seattle

IN THE home and in the institution, commercially prepared mixes for bakery products are today generally accepted and used as time-savers. Whether the advantage of time saved offsets the increased cost, and whether products made from such mixes are as acceptable as those produced from conventional formulas are questions worthy of study.

The object of this study was to determine the comparative cost and acceptability of certain products made from commercially prepared mixes and comparable products completely prepared from individual ingredients, using a conventional formula submitted by the dietitian.

Preliminary Study

An investigation was first made to select the most desirable of the available commercially prepared mixes for institutions. White cake, yellow cake, chocolate cake, plain muffins, corn muffins, and yeast rolls were chosen to be studied.

In selecting the commercial sample of each type of mix, availability of each brand, comparative costs, cost of additional ingredients, time required for preparation of each mix, and acceptability of the product made from the mix were considered.

Availability was determined by contacting the various wholesale houses in the Seattle area. Since it was learned that four brands were readily available, the final choice narrowed down to one of these. The wholesale cost of each brand was noted, and no significant difference was found. Also, since only water was to be added to each mix, the cost of ingredients added was comparable in the four brands.

No significant difference was found between the four available brands as far as labor cost was concerned, with the exception of the white cake mixes. Brand C required considerably less time, due to the method of mixing given in the manufacturers' instructions.

Since all cost factors were comparable for the four brands, acceptability therefore became the determining factor in selecting the mix to be used in the final study.

To learn the acceptability of the products, both in this initial study, and in the final study later, a panel of five judges was asked to score the products (1), using a scoring system which lists eight characteristics: appearance, texture, color, exterior and interior, moisture content, lightness, tenderness, and flavor (that is, taste and odor). Each characteristic was given a score, ranging from 5 to 1 points as follows: 5—excellent; 4—very good; 3—good; 2—fair; and 1—poor.

Scores for acceptability showed that for all products except the plain muffins Brand C was favored conclusively. It was thus chosen for use in the final study for: white cake, yellow cake, chocolate cake, corn muffins, and yeast rolls. For the plain muffins Brand B was used.

Selecting the Conventional Formulas

The conventional formulas to be used in the final study were chosen from reliable sources (2, 3) and had been tested and approved by professionally qualified dietitians employed in quantity food production.

All of the cakes which were prepared completely in our kitchens were combined according to the conventional method, except for the white cake, for which the "quick method" was used. With this method, the flour and shortening are mixed, the remaining dry ingredients and part of the liquid are added and blended, and the remaining liquid and eggs are finally added. This differs from the conventional method in which the fat and sugar are creamed, the eggs added, and then the dry ingredients and liquid added alternately in the three parts.

The recipes were all reduced to yield twenty-five instead of the more usual fifty servings. Weight of the ingredients for each recipe was also checked against the weight of the commercial mix plus water. Except for the yeast roll recipe, the calculated weight of half of the given recipe was within 1 or 2 oz. of the weight of the mix plus water. Corrections were made in calculating the cost and yield of the yeast rolls, so that comparisons would be on identical amounts.

Each product made from the reduced formulas was taste-tested to determine whether it would meet the standards of acceptability set up for the study.

Determining Cost

Food cost of the products made from the mixes was based on the current purchase price per unit. The food cost for the conventional formulas was calculated from current wholesale market prices of the individual ingredients.

Labor cost was determined from the length of time needed to prepare the product. This included: time needed for weighing or measuring the ingredients, mixing, and baking (4). Times which would correspond to those of the average worker were recorded.

[1] Abstracted from a thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in home economics at the University of Washington, 1954.

Final Tests and Implications

The results of the final comparisons are given in Table 1. Data include food cost, labor cost, labor time, total cost including both food and labor costs, and scores for acceptability for the comparable products made from the commercial mixes and "from scratch" using conventional formulas.

For all products, total cost for the products made from standardized recipes was greater than for the similar product made from mixes. Except for the plain muffins and corn muffins, scores for acceptability of the products made by the two methods were within 1.5 points, indicating little difference in quality in the final products.

A comparison of the time required to make the various products shows that a saving in labor in each case resulted from the use of the mix. At a time when labor is one of the major costs to management, this factor may be the determinant in adopting the use of a commercially prepared mix.

This labor advantage, plus the actual money savings which are indicated, as well as the fact that the products prepared from the mixes were, except in two instances, as acceptable as those made from the individual raw ingredients surely indicates that more and more people concerned with quantity food production will find it desirable to use commercially prepared mixes for at least part of their bakery products.

In the case of the muffins, both plain and corn, and white cake (acceptability scores 3.76, 1.34, and 1.45 points, respectively, below those which were made from the individual ingredients) would suggest that perhaps manufacturers need to improve the mixes for these products before they can be adopted for wide use in food service.

Indiscriminate use of commercially prepared mixes, however, is certainly not indicated from this study. That different brands varied in quality and acceptability was shown clearly in the preliminary tests. Before adoption in a food service, tests should be made to indicate brands which produce products which are most acceptable to customers, patients, or clients. And, as indicated, the fact that a given brand's mix for one product can produce a high quality product is no guarantee that another product from the same line will be equally acceptable. Commercially prepared mixes should be compared for each product to be made.

Summary

The difference in food cost, labor time and cost, and acceptability of six types of commercially prepared mixes for bakery products was compared with the same factors for the same products made "from scratch" from individual ingredients, using standardized recipes in a large food service kitchen. For white cake, chocolate cake, yellow cake, corn muffins, and yeast rolls, the products made from the commercially prepared mix were less costly. These products were also found to be equally acceptable to the consumer.

Products made from the plain muffin mix, although costing less and requiring less time, were not as acceptable as those made from the individual ingredients.

A difference in quality was also demonstrated between the different commercial brands of mixes which were tested.

TABLE 1

Comparison of the cost and acceptability of mix and standard product

PRODUCT	FOOD COST	LABOR COST		TOTAL COST	ACCEPTABILITY SCORE*
		Time	Money		
White Cake					
		min.			*points*
Brand C	$0.675	40	$1.12	$1.795	30.7
Standard product	.70	56	1.568	2.268	32.15
Yellow Cake					
Brand C	.712	40	1.12	1.832	29.76
Standard product	.58	53	1.484	2.064	28.43
Chocolate Cake					
Brand C	.725	39	1.092	1.817	30.73
Standard product	.71	57	1.596	2.306	30.66
Plain Muffins					
Brand B	.605	30	.84	1.445	27.6
Standard product	.43	40	1.12	1.55	31.36
Corn Muffins					
Brand C	.527	30	.84	1.367	27.93
Standard product	.395	41	1.148	1.543	29.27
Yeast Rolls					
Brand C	.50	154	4.312	4.812	28.26
Standard product	.312	169	4.732	5.044	27.53

* Highest possible score was 40 points.

REFERENCES

(1) Dawson, E. H., and Harris, B. L.: Sensory Methods for Measuring Food Quality; Review of Literature and Proceedings of Conference. U.S.D.A. Agric. Information Bull. 34 (10), 1951.

(2) Terrell, M. E.: Large Quantity Recipes. Philadelphia: J. B. Lippincott Co., 1951.

(3) High Ratio Cakes. Cincinnati: Procter and Gamble Co., 1951.

(4) Working agreement and wage scale between Seattle Local Joint Executive Board representing cooks and assistants, Local #33, and Washington State Restaurant Assn., Inc., Seattle Hotel Assn. Effective June 1, 1953.

Book Reviews

Handbook of Food and Agriculture. Edited by Fred C. Blanck. New York: Reinhold Publishing Corp., 1955. Cloth. Pp. 1039. Price $12.50.

This 1000-page volume presents the latest information available on the application of science to the food and agricultural fields. Each of the twenty-six chapters has been prepared by an expert in the field. Of special interest are the chapters devoted to the effects of storage, processing, and packaging on the quality and, in some cases, on the nutritive value of a wide variety of food products. A concise discussion of chemical additives to foods both intentional and accidental, the functional value or nutritive quality of the same, and legislation related to the use of chemicals in foods should be of interest to individuals concerned with food production for public consumption.

The chapters devoted to meat, fish, poultry, cereals, dairy products, and poultry products include such information as standards and grades, inspection, factors which influence nutritive value, possible routes of contamination, and sometimes, sources of the food and distribution.

The final chapter and appendix present the federal Food, Drug and Cosmetic Act and the general regulations for its enforcement; the federal Meat Inspection Act; U.S.D.A. Grade Standards and Inspection Service; food consumption tables; description of special food agencies and research groups; and a guide to the food literature.

While there is a limited amount of nutrition information in this volume, it will serve as an excellent reference book for all individuals interested in any phase of the many problems involved in the production and distribution of food.—*Dena Cederquist, Ph.D., Associate Professor, Department of Foods and Nutrition, Michigan State University, East Lansing.*

Nutrition for Practical Nurses. By Phyllis S. Howe. Philadelphia: W. B. Saunders Co., 1955. Paper. Pp. 174. Price $2.50.

This manual, designed for the student practical nurse during her training period, is written by the Nutrition Instructor, West Contra Junior College, Richmond, California.

The manual is divided into three major sections; "Normal Nutrition," "Diet Therapy," and "Selection and Care of Food." In Section I (Normal Nutrition) the sub-divisions are: carbohydrates, proteins, fats, vitamins, mineral elements, water and cellulose, digestion, plus some material on menu planning, national and religious food habits, and finally a chapter devoted to dietary care during pregnancy and lactation, growth, and aging.

Section II, which is devoted to a presentation of diet therapy, deals briefly with the various diets that would be encountered in the hospital setting. Section III is concerned with selection and care of food, the various aspects of preservation, composition and cooking of the major classifications of food (meat, milk, vegetables, fruits, and cereals).

The author has presented these three major sections in the order described, and the opinion of the reviewer is that the order is not ideal, if the manual is to be used "straight through." The material and style of presentation seem quite satisfactory for the intelligence level of the average student practical nurse. This manual could be used with both the lecture and laboratory experience of the student if the nutrition instructor carefully intergrated the laboratory experience with each chapter of the book.

The material presented, both verbal and illustrative, is comprehensive and easily understood. Depending on interest and availability of time, some supplementary physiologic explanations of digestion and absorption could be developed by the instructor.

While it is important for the practical nurse to be familiar with the dietary treatment of various disorders, the emphasis more often needs to be placed on good normal nutrition and how it can be obtained and maintained. If the cost is not prohibitive, this manual could serve as a useful tool in the nutrition program of the practical nurse.—*Marjorie J. Simmons, Veterans Administration Center, Los Angeles.*

Energy Value of Foods—Basis and Derivation. By Annabel L. Merrill and Bernice K. Watt. Agriculture Handbook No. 74. Washington, D. C.: Government Printing Office, 1955. Paper. Pp. 105. Price 55 cents.

This Handbook presents the information which served as the basis for the factors used in estimating the caloric values in Agriculture Handbooks No. 8 and 34, *Composition of Foods—Raw, Processed and Prepared* and *Composition of Foods Used in Far Eastern Countries*. In the introduction, the authors emphasize the need for accurate estimation of the energy value of foods in dealing with problems of normal nutrition, undernutrition, or obesity and point out the limitations of Atwater's general factors of 4 calories per gram for protein and carbohydrate and 9 calories per gram for fat.

Part I of this new Handbook includes a discussion of the sources of food energy and the methods employed in determining the energy-yielding components of foods. It reviews the early classic experiments of Atwater and his associates which provided the basis in this country for measuring the energy value of foods and presents a comparison of the gross energy value of food obtained by direct combustion of a food sample with the value obtained by applying the heats of combustion of the energy-yielding components of food to food composition data.

In Part II is reviewed the experimental work on the digestibility of foods and the availability of energy from digested nutrients which served as the basis for Atwater's general factors. This is followed in Part III by a discussion of the experimental data used for deriving the specific caloric factors for individual items of food or of small food groups which were used in the preparation of Handbooks 8 and 34. These data are summarized in tabular form.

The last section, Part IV, gives a comparison of the calculated and determined available calories for diets differing materially in composition. From this presentation it is clear that Atwater's general factors are indeed suitable for estimating the energy value of average family diets or of the national food supply of this country from the total quantity of protein, fat, and carbohydrate. For estimating the energy value of individual foods, experimental and therapeutic diets, or food supplies different in character from that of this country, however, the specific calorie factors should be employed.

The authors are to be commended for their comprehensive review of the literature. Their detailed discussion of those early publications, many of which are no longer readily available, will be welcomed by all who are interested in this area of nutrition. The extensive tabular material enhances the value of this Handbook for all students and research workers in the field of energy metabolism.—*Jane M. Leichsenring, Ph.D., Professor of Home Economics, Institute of Agriculture, University of Minnesota, St. Paul.*

Letters to the Editor . . .

More on Form Diets

To the Editor:

Recognizing fully the original intent of the committee regarding the set of six diabetic *form* diets, I think it inadvisable from most standpoints for the "standardized diets" to appear in diet manuals and for them to be used by dietitians.

The "pro" viewpoint would be that standardized diets in diet manuals might provide reference material for other professional medical treatment groups in the mechanics of diabetic diet calculation. The "cons" against both their use by dietitians and inclusion in diet manuals seem to me to be greater in number, namely:

(a) Stimulates the dietitian to abandon individualization of meal pattern for the patient considering his particular influences.

(b) Encourages calling diets by numbers and forgetting their content, which is certainly a non-professional procedure in patient care.

(c) Many times causes medical staff to feel they are being dictated to as to diabetic diets they may order. Undesirable working relationships can develop easily this way.

Perhaps consideration should be given to setting up one "Example Meal Plan" to show how the Exchange List data are used in lieu of publishing the six form diets. This might stimulate the physician to qualify himself to plan daily diets individualized for the patient he is treating.—Jean Crooks, *Dietetic Service, Department of Medicine and Surgery, Veterans Administration, Washington, D. C.*

To the Editor:

I have not worked directly with the six form diets prepared by The American Dietetic Association, American Diabetes Association, and the U.S. Public Health Service, However, I have heard them discussed at many of our meetings.

I do not feel that any kind of form diet should be handed out. The knowledge of calculation and adjustment of diets to the patient should be understood by the medical residents and interns as part of the hospital teaching.

For greater accuracy and for teaching portion size to the patients, I favor the weighing of foods while the patient is in the hospital and until he is familiar with his food allowance.—Leila Colwell, *Director of Dietetics, Evanston Hospital Association, Evanston, Illinois.*

To the Editor:

The plan followed by some of the diabetic specialists on our staff is very satisfactory from the standpoint of the dietary department as well as the patient. The doctor takes the requisition to the bedside and discusses present food habits with the patient, roughly calculating the diet to conform to the patient's preferences as closely as consistent with good diabetic management. When the dietitian on the diabetic service receives this order, she checks the calculation and interviews the patient regarding specific food preferences. With this method, the patient is able to adjust to the diabetic diet with a minimum of effort. If he requests a larger quantity of some food, such as bread, milk, or meat, the doctor usually orders that these foods be increased, provided the patient is not overweight. *When the diet is adjusted to the patient, we believe that he will be more apt to follow it in the years ahead.*—Elizabeth H. Tuft, *Executive Dietitian, Chicago Wesley Memorial Hospital, Chicago.*

Editors' Note: Do we want standardized diets? This provocative question was raised by Margaret A. Ohlson, Ph.D., Head, Department of Food and Nutrition, Michigan State University, in reviewing *A Standardized Diet for Metabolic Studies.*[1] She points out that much of our understanding and progress has come as a result of the imagination of the individual worker in developing his own plan which, by its difference from other plans, has pointed the way to new knowledge. She says, "It is too easy to accept standardization on the assumption that repetition is necessarily productive."

Do these comments apply also to standardized diets for our diet manuals? If a form diet of 1200 calories were standardized for general use in reducing programs, would we have learned that the high-protein, moderate-fat regimen brings greater satisfaction?

Further discussion of this topic appears in the May issue of the Journal, page 454.

We Beg Your Pardon

To the Editor:

The first footnote in my paper, "Effect of Food Losses on Nutritive Content of Diets in Four Institutions" (January Journal, page 19) reads: "J. Aileen Merwin *then* carried on the study for Arthur D. Little, Inc., until her death in 1953." The "then" following Miss Merwin's name is an error. Miss Merwin did not succeed Miss Lifquist as project leader, but rather was responsible for the organization, planning, and collection of the data for all parts of the study from its beginning early in 1952 until her death.—Constance L. Brine, Ph.D., *Department of Food and Nutrition, University of Rhode Island, Kingston.*

To the Editor:

In your short item in the March issue of the Journal (page 213), we note a misprint, namely that the Tablespoon measure for Great Britain should read $\frac{5}{8}$ fl. oz., not $\frac{2}{8}$.—W. E. Garran, *Editor, Food and Nutrition Notes and Reviews, Australia.*

Addresses

To the Editor:

The Current Literature section of the Journal is a valuable service which all of us appreciate. Would it be possible to include the address of the senior author with the reference to the article? This would enable your readers to contact the author directly and obtain additional information.—Edwin L. Sexton, *Chief Chemist, The Best Foods, Inc., New York 17.*

Editors' Note: On request, the editors are always glad to furnish this information, as well as the addresses of the various periodicals and magazines abstracted in our Current Literature section. We regret that space limitations prevent publication of all such addresses as Mr. Sexton suggests.

---

[1] Meyer, F. L., Brown, M. L., Wright, H. J. and Hathaway, M. L.: A Standardized Diet for Metabolic Studies: Its Development and Application. U. S. D. A. Tech. Bull. No. 1126, 1955.

Current Literature

Contributed by Janette C. Carlsen and Ethel M. Miller, The Johns Hopkins Hospital, Baltimore; and the Journal staff

AMERICAN JOURNAL OF DIGESTIVE DISEASES

Vol. 1, n.s., April, 1956

*Phenmetrazine in the management of obesity. E. P. Gelvin, U. H. McGavack, and S. Kenigsberg.—p. 155.

Phenmetrazine in Obesity. Patients were studied while taking phenmetrazine and a placebo, the dietary prescription having been kept constant. The same patients were observed while taking each preparation, thus allowing each to serve as her own control. The rate of weight loss while taking phenmetrazine was more than twice that observed with a placebo. No significant effects on the blood pressure, pulse rate, hemoglobin, white blood count, urinalysis, or basal metabolic rate were noted. Side effects while taking phenmetrazine were only slightly more frequent than during placebo medication.

AMERICAN JOURNAL OF PHYSIOLOGY

Vol. 184, March, 1956

*Response to stress by riboflavin-deficient and pantothenic acid-deficient dogs. L. Arnrich, L. S. Hurley, B. R. Forker, and A. F. Morgan.—p. 515.

Stress in Riboflavin and Pantothenic Acid Deficiency. The blood sugar changes of the deficient dogs under the stress of forced swimming indicates some derangement of the carbohydrate metabolism in both pantothenic acid-deficient and riboflavin-deficient dogs. The exaggerated blood glucose levels in riboflavin-deficient dogs just after swimming may be ascribed to epinephrine action. A gradual lowering of post-absorptive blood glucose and chloride has been demonstrated in riboflavin-deficient dogs with extremely low values at the time of collapse. There may also be changes in the target organs, e.g., the liver, caused by the deficiency directly and not mediated by the adrenal hormones. The two deficiencies, although similar, present some striking differences. The marked and persistent reduction in carbohydrate tolerance shown by the riboflavin-deficient animals contrasts with the normal or low blood sugar of the stress pantothenate-deficient animals. The latter were maintained by adrenocortical extract whereas in the former death occurred. The hyperglycemia of swimming was depressed by adrenocortical extract in normal and pantothenate-deficient dogs, but was unaffected in the riboflavin-deficient dogs. These observations point to differences in the mechanism of failure of the adrenal-pituitary cycle in the two deficiencies. The supply of circulating ketosteroids may be abnormally low in pantothenate deficiency but this may not be the case in riboflavin deficiency.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 46, April, 1956

*Incidence of fecal streptococci and coliform bacteria in frozen fish products. E. P. Larkin, W. Litsky, and J. E. Fuller.—p. 464.

*Sanitation of food handling in school lunchrooms. J. H. McCutchen.—p. 473.

Bacteria in Frozen Fish Products. The introduction of precooked frozen fish and fish products to the American housewife has greatly increased the consumption of fish foods within recent years. The demand has been so great that raw, frozen fish is being imported from Canada and from several European countries. This sudden expansion of imports has increased the possibility that Americans may be consuming fish foods that have been improperly processed or handled. A comparison has been made between the coliform bacteria and fecal streptococci in frozen fish and fish products. In most processing procedures the fish is cooked and then breaded. Results from this investigation indicate that the breading may be the main source of contamination. Most of the fish products had bacteria counts of less than 3000 per gram.

Food Handling in School Lunchrooms. The state health department of Missouri has for a number of years conducted food sanitation training courses for the owners, operators, and employees of food-handling establishments and has developed a number of color slides indicating the correct and incorrect methods of handling food, washing and sanitizing dishes and equipment. To assist school officials and employees of school lunch programs, the food-handling courses have been presented for these individuals and also the junior and senior classes of the high school. The reception by the students to this type of course has been gratifying. When they know the proper sanitation procedures, they not only demand them in their school lunch programs, but also are quick to criticize improper techniques in other public establishments. Many also tell their mothers about the proper method of handling food, cleaning, and sanitizing dishes and equipment; thus these courses also influence the handling of food in the students' homes.

ARCHIVES OF PEDIATRICS

Vol. 72, December, 1955

*The role of veins in the circulation. H. Mautner.—p. 387.

Role of Veins in the Circulation. Experiments were done with livers of dogs to discover the chemical differences before and following an anaphylactic shock. During the experiment, it was found self-evident that any contraction of veins has an enormous influence on the filling of capillaries. While contraction of the arterioles reduces the amount of blood in the capillaries, contraction of veins will cause a quicker and intensive dilatation of the capillaries. It was also found that very weak muscles of the veins would be able to influence the filling of capillaries. The liver sphincter of dogs is a most impressive mechanism. The veins achieved their effects everywhere in the body.

BOLETIN DE LA OFICINA SANITARIA PANAMERICANA

Vol. 39, December, 1955

La estabilidad del yodato de potasio en la sal comun. G. Arroyava, O. Pineda, and N. S. Scrimshaw.—p. 575.

THE BRITISH JOURNAL OF NUTRITION

Vol. 10, No. 1, 1956

*The protective action of vitamin A upon various tissues in the avitaminotic rat, and the sensitivity of these tissues to vitamin A deficiency. J. T. Irving and M. B. Richards.—p. 7.

*Vitamin B_{12} and protein metabolism. K. M. Henry and S. K. Kon.—p. 39.

Tissue Requirements for Vitamin A. From this experiment it appears that the direct association of vitamin A requirement with body-weight is too simple. The requirement is a function of that of the most sensitive tissue at the time of the experiment, and the most sensitive tissue is different at different ages. It is not said that the activities of different tissues are related to body growth as a whole. It appears that the only way to assess the true vitamin A requirement is to examine the whole body to find what level maintains all the tissues in an optimal condition.

Vitamin B_{12} and Protein Metabolism. The effect of vitamin B_{12} on protein metabolism has been studied in a series of experiments with B_{12}-deficient and normal rats. For the deficient rats, the biologic value of casein was increased to the same extent by the addition of 1 per cent methionine as by the addition of 1 per cent homocysteine and a vitamin B_{12} supplement. Homocysteine was ineffective in the absence of B_{12}. It is concluded that vitamin B_{12} is involved in the synthesis of methyl groups.

BRITISH MEDICAL JOURNAL

No. 4967, March 17, 1956

*Treatment of malignant hypertension.—p. 619.

No. 4971, April 14, 1956

*Deposition of fat in coronary arteries after exposure to cold. E. A. Sellers and R. W. You.—p. 815.

Malignant Hypertension. It is now possible to define principles for the treatment of malignant hypertension. Prolonged and adequate reduction of blood pressure will cause disappearance of retinopathy, improvement of symptoms, and an increase in life span. Adequate reduction of blood pressure can be achieved by the use of ganglion-blocking agents, or by the rigid and extreme depletion of salt induced by the rice diet. The disadvantages and difficulties of methonium therapy are likely to be equalled by those of the rice diet, which has never appealed to clinicians in Great Britian. For the diet to be effective, the patient must be depleted of sodium, which may be particularly dangerous if the kidneys are damaged. The diet is exceedingly unpalatable, and many patients refuse to continue it, though ion-exchange resins, which prevent absorption of sodium may permit a more generous allowance of salt. In general, ganglion-blocking agents appear to be the treatment of choice, but the results with a rigid low-sodium diet appear to be at least as good as with methonium compounds. The rice diet should be kept as an alternative for the occasional patient in whom drug therapy is unsatisfactory.

Deposition of Fat in Coronary Arteries. Wistar rats fed a stock ration were kept in an environment of 1 to 3°C. for ten to eighteen months. More than half developed a lipoidosis of the coronary vessels. In a few cases minimal lesions were present in the aortas, also. Renal damage varying in severity was almost always present. The systolic blood pressure measured directly was not elevated. Serum total lipids and free and bound cholesterol were significantly increased in rats fed the stock diet in a cold environment for a year or more. Coronary lipoidosis was produced in rats fed a high-fat, high-cholesterol diet with choline and exposed to cold for six weeks. Myocardial lesions were also observed in such "cold" rats, whether choline was present or not. Arterial lesions were not observed in "cold" rats fed the same diet without choline.

DIABETES

Vol. 5. March–April, 1956

Serum lipids in diabetic and nondiabetic rats. Effect of varying lipid diets. R. N. Cagan, R. Nichols, and L. Loewe.—p. 112

*Serum lipids and polysaccharides in diabetes mellitus. D. Adlersberg, C.-I. Wang, H. Rifkin, J. Berkman, G. Ross, and C. Weinstein.—p. 116.

Lente insulin in diabetic children. R. A. Lussky, A. L. Newcomb, and H. S. Traisman.—p. 124.

Serum Lipids and Polysaccharides in Diabetes. A simultaneous correlative analysis was made of the serum lipid partition, serum total cholesterol, esterified cholesterol, phospholipids, neutral fats and total lipids, and the serum glucosamine and total polysaccharides bound to serum protein in sixty-six patients with diabetes mellitus. The concentration of these substances in the serum remained normal in the patients with uncomplicated diabetes. Those with retinopathy but without evidence of renal involvement showed increases of total serum lipids, neutral fats, glucosamine, and polysaccharides. Serum cholesterol and phospholipids remained normal. Patients with fully developed diabetic glomerulosclerosis exhibited elevation of all lipid fractions as well as serum glucosamine and polysaccharides.

FOOD SCIENCE ABSTRACTS

Vol. 28, April 1, 1956

*Problems in the use of antibiotics for preserving meat and fish. M. Ingram, E. M. Barnes, and J. M. Shewan.—p. 121.

Preservative Qualities of Antibiotics. This review article deals with the possible applications of antibiotics to preservation of foods, especially meats and fish. Public health implications, i.e., toxicity, medical considerations, legal regulations, and so on, are also covered.

JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY

Vol. 4, March, 1956

*Disagreement on food additives legislation again. —p. 201.

*Methionine content of soybeans as influenced by location and season. O. A. Krober.—p. 254.

Rapid colorimetric methods for simultaneous determination of total reducing sugars and fructose in citrus juices. S. V. Ting.—p. 263.

Vol. 4, April, 1956

*Reliability of the phenylthiocarbamide-sodium benzoate method of determining taste classifications. E. F. Hoover.—p. 345.

Vol. 4, May, 1956

*Vitamin, mineral, and proximate composition of frozen fruits, juices, and vegetables. M. Burger, L. W. Hein, L. J. Teply, P. H. Derse, and C. H. Krieger.—p. 418.

Rapid estimation of vitamin A using a surface active agent. E. T. Gade and J. D. Kadlec.—p. 426.

Food Additive Legislation. A compromise between the governmental and injunctive approaches to the regulation of chemical additives of food products has been introduced. The main feature is that manufacturers, whose requests for approval have been turned down by the Food and Drug Administration, could institute court action asking for a declaratory judgment. Also involved are questions of defining a new additive, the *ad hoc* advisory committees, and the grandfather clause which would provide that the status of those additives already approved and in use not be affected unless in fact unsafe.

Methionine Content of Soybeans. An important source of vegetable protein, the soybean, is fed to livestock through soybean oil meal. This investigation found differences in methionine content of protein in soybeans. The results indicated that soybean protein is produced in the seed with variable proportions of amino acids. In most cases, season and location were not consistent enough in their effect to be significant, but there were definite genetic differences indicating that it should be possible to increase methionine in soybean protein by breeding.

Taste Perception. The problem of classifying persons into groups according to their taste perceptions is yet unsolved. In this study, the phenylthiocarbamide-sodium benzoate method was found unreliable. Most persons did not give reproducible taste reactions with at least one of the two chemical compounds. Another important factor in the study was the inability of some individuals to define standard tastes correctly.

Nutrients in Frozen Foods. Eight vitamins, six minerals, and proximate composition were determined on composites of 796 sets of samples representing 1953 and 1954 production seasons for 14 frozen fruits, 7 frozen juices, and 30 frozen vegetables in the continental U.S. and Hawaii. A total of 27,562 individual packages were used in testing. These packages were taken from commercial processing lines of more than one hundred fifty freezing plants in all production areas. They were taken at statistically predetermined intervals to provide for representative sampling with regard to variables in weather, varieties, harvesting, processing, packaging, and grades. Substantial amounts of ascorbic acid were found in all citrus juices, in practically all fruits, and in most vegetable products. Many of the products contained low levels of sodium. Data available in the literature on nutrients in frozen foods are limited.

JOURNAL OF THE AMERICAN GERIATRICS SOCIETY

Vol. 4, February, 1956

*Lipid metabolism and the effect of a combined lipotropic agent. W. B. Rawls and J. B. Tichner.—p. 89.

Vol. 4, March, 1956

*Preliminary evaluation of a non-dietary regimen for reducing cholesterol levels in the aged. N. Blumberg, M. A. Fischbach, L. Zisserman, and G. Freedman.—p. 276.

Vol. 4, April, 1956

*Tube feeding with natural foods in elderly patients. J. Barron and L. S. Fallis.—p. 400.

Lipid Metabolism and Lipotropic Agents. It is demonstrated in this study that there is no absolute relationship between the blood cholesterol or phospholipid levels or their ratios and the chylomicron-lipomicron counts. The administration of a combination of lipotropic agents caused no significant changes in the blood cholesterol or phospholipid levels or in their ratio in either patients with known atherosclerosis or in those presenting no evidence of atherosclerosis. A reduction in the number of chylomicrons could be obtained almost at will in some subjects. The question of lipid metabolism and its role in the production of atherosclerosis is still unsolved.

Non-Dietary Reduction of Cholesterol. This investigation was to determine whether lipotropic therapy offered a practical means of counteracting an obvious excess of lipids without recourse to an unenforceable diet. The trend in results is hopeful. More studies involving more patients and longer periods of observation to determine whether a lower concentration of serum cholesterol bears directly on a

patient's life expectancy need to be made.

Tube Feeding with Natural Foods. There are two routes for the administration of supplementary feeding; oral and intravenous. In recent years emphasis has been on intravenous; however, most will agree that if it can be used, the oral route is superior. In natural whole foods, such as milk, eggs, meat, vegetables, and fruit, there is an excellent natural source of proteins, fats, carbohydrates, vitamins, minerals, and other essential nutrients, as yet unidentified. Nutritional balance can be restored by natural foods put into the upper gastrointestinal tract by means of small, non-irritating tubes. Geriatric patients present a special opportunity for application of this method. By restoring nutritional balance, more of these elderly patients can be safely brought through their medical or surgical programs.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 160, April 21, 1956

*Magnesium deficiency syndrome in man. E. B. Flink. Council on Foods and Nutrition.—p. 1406.

*Food poisoning from milk powder. Foreign Letters. United Kingdon.—p. 1430.

*Edible mushrooms. Queries and Minor Notes.—p. 1438.

Vol. 160, April 28, 1956

*Importance of vitamin C in the diet. Council on Foods and Nutrition.—p. 1470.

Vol. 161, May 5, 1956

*Dental caries. Queries and Minor Notes.—p. 119.

*Excessive coffee drinking. Queries and Minor Notes.—p. 119.

Vol. 161, May 19, 1956

*Water softener. Queries and Minor Notes.—p. 301.

Magnesium Deficiency in Man. Chronic alcoholism appears to be an important cause of a magnesium deficiency syndrome. Prolonged administration of magnesium-free parenteral fluids also results in a magnesium deficiency syndrome in some patients. Patients with hepatic cirrhosis who have very low serum magnesium levels are particularly apt to develop serious nervous and mental symptoms when ammonium salts are administered. The magnesium requirement of man is not easy to determine, but diets containing 0.25 to 0.3 gm. per day have kept adults in normal balance.

Food Poisoning from Milk Powder. In England, eight large outbreaks of food poisoning within a month were attributed to the use of reconstituted spray-dried milk. Serial examination of the daily batches of dried milk from the factory showed the presence of micrococci in nearly every sample, the number reaching a maximum in warmer weather. Roller-dried milk powder from other manufacturers showed no micrococci. Tests on the spray drying of infected milk showed that normally the organisms were killed in the process of pasteurization and evaporation. Infection and bacterial multiplication probably occurred in the milk storage tank, and although the bacteria were largely destroyed in the drying process, the enterotoxin was not.

Edible Mushrooms. There is no practical or reliable test for determining edibleness of mushrooms. Numerous tests have been described as infallible, such as whether a mushroom peels, whether it turns silver black, or whether it has been found near a rusty nail. None of these tests is reliable. The only practical way to make sure that a mushroom is edible is to use only commercially cultivated ones, either canned or fresh.

Importance of Ascorbic Acid. Ascorbic acid is important for the preservation of the normal healthy structure of the gums and soft tissues of the body and for the development of teeth and bones. It must be supplied by the diet because the human body cannot synthesize ascorbic acid, as can some animals. The value of citrus fruit and tomatoes as sources of ascorbic acid is well known. Other foods that aid in maintaining normal daily intakes are potatoes; various vegetables, especially greens, raw cabbage, and green peppers; and berries, other fruits, and melons. The need for supplying infants with ascorbic acid has prompted the Council to formulate certain additional criteria believed to be of importance in orange juice especially prepared for infants.

Dental Caries. Many primitive people with good teeth live on high-carbohydrate diets, often including simple sugars. What accounts for the different effects on the teeth of natural and refined foods? The writer feels inclined to ascribe the protective effect of a "natural" diet to a biophysical rather than to a biochemical factor. The low loads of refined soft diets, he feels, alter the molecular structure of the teeth and render them susceptible to caries.

Excessive Coffee Drinking. In considering the effects of drinking twenty to thirty cups of coffee daily, the amount of cream and sugar which in some cases are added to coffee comes to mind. Consuming twenty cups of coffee with the usual quantity of sugar added would contribute to the possibility of obesity and may also have an adverse effect on the appetite for other foods. The caloric effect of cream, when ingested with coffee, should also be considered in terms of its influence on obesity, displacement of essential elements of the diet, and levels of fat cholesterol intake.

Water Softener. The amount of sodium ions added to water by a water softener depends on the efficiency of the softener and on the hardness of ions present. The amounts of hardness ions present vary with the source of water. The efficiency of the softener will depend on the condition of ion exchanger and the rate of drawing of the water.

JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 219, April, 1956

*Exchange of free fatty acids and glyceride fatty acids during fat digestion in the human intestine. E. H. Ahrens, Jr. and B. Borgström.—p. 665.

*Quantitative studies on metabolites of tryptophan in the urine of the dog, cat, rat, and man. R. R. Brown and J. M. Price.—p. 985.

Exchange of Fatty Acids in Digestion. The process of fatty acid exchange has been studied during digestion in the human intestine. Oleic or palmitic acid labeled with C^{13} in the carboxyl carbon was dissolved in triolein at the concentration of approximately 5 per cent. The mixture was homogenized with protein and carbohydrate in a balanced liquid formula feeding, and aspirations were made under near physiologic conditions at four levels in the upper intestine of two patients. Labeled acids were found in all glyceride classes in all aspirations in di— >, trimonoglycerides. The over-all direction of the combined reactions is toward hydrolysis. Data presented indicate that hydrolysis proceeds at a faster rate than absorption, with the result that fatty acids accumulate in the digestion mixture, but that they are absorbed more rapidly than glycerides.

Tryptophan Metabolites. Because of a possible relationship of tryptophan metabolism to the induction of bladder cancer, metabolites of tryptophan in the dog, cat, rat, and man were measured. For the human subjects, four men, age twenty-six to thirty-three years, with no history of serious renal, gastrointestinal, or metabolic disease were used. They were allowed free choice of diet, but were instructed to avoid foods rich in niacin. Tryptophan was administered orally, and 24-hr. urine samples collected for analysis. The dogs, cats, and rats were likewise given tryptophan supplements, and urine samples were analyzed later. Of the metabolites analyzed, excretion of xanthurenic acid was the only one which was definitely increased by the supplements in man and the rat. The other two species apparently failed to produce significant quantities of it. Extremely low levels of tryptophan metabolites were found in cat urine, a fact of considerable interest in the light of the apparent rarity of bladder cancer in this species. Because of the relatively large excretion by many patients with bladder cancer of kynurenine, kyneurenic acid, and acetylkynurenine after ingestion of tryptophan, an interesting area for speculation on the possible etiology of this type of neoplasm is indicated.

JOURNAL OF CLINICAL INVESTIGATION

Vol. 35, April, 1956

*Familial hypoglycemia precipitated by amino acids. W. A. Cochrane, W. W. Payne, M. J. Simpkiss, and L. I. Woolf.—p. 411.

*The effect of estrogen on water and electrolyte metabolism. I. The normal. J. R. K. Preedy and E. H. Aitken.—p. 423.

*The effect of estrogen on water and electrolyte metabolism. II. Hepatic disease. J. R. K. Preedy and E. H. Aitken.—p. 430.

*The effect of estrogen on water and electrolyte metabolism. III. Cardiac and renal disease. J. R. K. Preedy and E. H. Aitken.—p. 443.

Familial Hypoglycemia Precipitated by Amino Acids. Protein, leucine, or isovaleric acid, fed to three members of a family with spontaneous idiopathic hypoglycemia, caused a marked fall in the fasting true blood sugar level. They

had a similar effect in a fourth child with hypoglycemia due to islet cell hyperplasia, but had no effect in normal fasting individuals. In another case of spontaneous idiopathic hypoglycemia, casein had a less marked effect. High-protein feeding produced more fits and lower blood sugar values in the affected family than a low-protein diet. The non-sugar reducing level was significantly outside the normal range in some blood samples from these patients. The apparent blood sugar level can be very misleading. The non-sugar reducing level fell nearly as fast as the true blood sugar level on feeding leucine or casein. A casein test meal is advocated to differentiate this type of hypoglycemia.

Normal Estrogen and Electrolyte Metabolism. The effect of daily administration of estradiol on water and electrolyte metabolism has been studied with eleven normal subjects. A slight and transient decrease in urinary output of chlorine, sodium, and water was observed, which was significant. Plasma chlorine and sodium levels were not significantly affected. There was no significant change in urinary potassium output in eight subjects. Urinary phosphate output was not significantly changed in four out of six cases. In the two remaining subjects, there was a small but significant decrease. There was a decrease in total serum protein and venous hematocrit by approximately the same percentage, suggesting an increase in plasma volume. Evidence is presented that the transient decrease in urinary chlorine, sodium, and water output is associated with an increase in extracellular fluid volume.

Estrogen and Electrolyte Metabolism in Cardiac Disease. Daily administration of estradiol caused marked sodium chloride and water retention in cases of constrictive pericarditis and in cardiac failure of other origin, but not in two cases of peripheral venous obstruction. The same dosage of estradiol caused no significant sodium chloride and water retention in a group with the nephrotic syndrome or in two cases of low plasma albumin edema with renal disease. These findings indicate that the sodium chloride and water retention following estrogen administration depends mainly on disturbances of the hepatic circulation, and that the kidney plays no primary role. This evidence supports the hypothesis that the quantitative difference observed between the fluid retention in cirrhosis with ascites and that of cirrhosis without ascites following estrogen administration may be accounted for by hepatic circulatory factors. It is suggested that increased estrogen activity may be a factor in fluid retention in cardiac failure where the hepatic circulation is prominently affected.

JOURNAL OF HOME ECONOMICS

Vol. 48, May, 1956

*Nutritional evaluation of food purchased by 146 urban families during 1953. L. Kelley, M. A. Ohlson, and G. G. Quackenbush.—p. 355.

*Effect of a dietary supplement on height and weight of children. C. H. Edwards, J. A. Lomax, and G. Grimmett.—p. 363.

Nutritional Evaluation of Food. This report gives the average quantities and costs of food and nutrients available to the 146 families who provided complete consumer records for 1953. The report also summarizes food purchases and available nutrients in relation to family sizes, types, per capita incomes, and meal expenditures. Family meal costs and food purchase patterns were more closely associated with nutritional quality of the food than with other factors, such as family size, type, and per capita income.

Effect of a Dietary Supplement. The addition of a low-cost vegetable protein food to the mid-day lunch of elementary school children brought significant responses in height and weight. The children receiving the supplement appeared to be more cooperative, energetic, and responsive in class, and had better school attendance.

THE NEW ZEALAND MEDICAL JOURNAL

Vol. 54, October, 1955

*Antileptospiral effect of milk L. Kirschner and T. Maguire.—p. 560.

Vol. 54, December, 1955

*Liver enlargement and protein deficiency states in Polynesians in Western Samoa, Niue, and New Zealand. D. D. McCarthy—p. 651.

*Food poisoning due to *Clostridium welchii*. C. N. D. Taylor.—p. 702.

Antileptospiral Effect of Milk. A natural protective agent against both poisonous and nonpoisonous mutants of leptospira was found in samples of milk from cows, goats, and human beings. It occurred in degrees and was mainly associated with the casein. It was found to a lesser extent in whey. The presence of this factor explains the absence of milk-bovine infections in countries where bovine leptospirosis is widely spread.

Liver Enlargement and Protein Deficiency in Polynesian Diets. Protein malnutrition is apparently much greater than reported in medical statistics of the Polynesian areas. One indication of this is the symptomless enlargement of the liver found among children of the weaning and post-weaning period. The population depends on vegetable protein for its chief source of dietary protein. The Samoan diet consists mainly of taro, bananas, breadfruit, and coconut supplemented by small fish and shellfish from the rocks and reefs. Further research on the protein deficiencies is being carried on.

***Clostridium Welchii* Food Poisoning.** Food poisoning by *Clostridium welchii* has relatively mild symptoms and therefore is sometimes overlooked. *Clostridium welchii* is heat resistant, with an incubation period of from 8 to 24 hr. It is described as a lower bowel infection without vomiting and general symptoms. The usual medium of infection is a meat dish, which has been prepared the day before being consumed. The food seems normal in taste and appearance. The most important prevention is that meat should be cooked and eaten the same day; if not, it should be cooled rapidly and refrigerated.

NUTRITION REVIEWS

Vol. 14, May, 1956

*Evaluation of dietary proteins. J. B. Allison.—p. 129.

*The effect of exercise on the serum lipids. Clinical Nutrition.—p. 132.

*Vitamin content of turnip green plants. Notes.—p. 159.

Dietary Proteins Evaluated. The goal of protein nutrition should be supplementation of the diet to produce a proper balance of amino acids, the intake of both nitrogen and calories being adjusted to produce an optimum development of lean body mass. The search is for a group of protein sources that combined will provide amino acids in proper amounts and ratios. Dietary protein is to provide a pattern of amino acids appropriate for the synthesis of tissue proteins and other metabolic functions. Nonessential amino acids always accompany essential amino acids in dietary protein, and it is possible that they also play a role when supplied afresh by affecting the efficiency of utilization of the pattern. Amino acid requirements are influenced by a number of variables, many of them unknown or little understood. Their essentiality may vary also with the physiologic state of the person, shifting during growth, gestation, lactation, or disease. Further researches are needed to establish more adequately the "ideal" reference protein and to test its usefulness.

Exercise and Serum Lipids. In an observation of four normal subjects, it was suggested that diversion of excessive food calories to mechanical energy may prevent a rise in serum lipid levels. During young adulthood, high caloric intake is associated with the requirements of muscular activity. With increasing age, the activity decreases, but the caloric intake does not. The resulting increase in serum lipid, it is speculated, may then provide one requisite for the development of atherosclerosis.

Vitamin Content of Turnip Green Plants. This study was done on field-grown turnip green plants from two different locations. The plants were from two spring seasons and one fall season. Sampling was done twice a week for six weeks to analyze leaf blades, midribs, and roots. Carotene, ascorbic acid, riboflavin, and thiamine were studied, and a striking consistency was apparent in the contents of the turnip organs. Values of blades of leaves were considerably higher than for the midribs and roots. During the sampling period, the concentrations of ascorbic acid and thiamine remained relatively constant. The riboflavin and carotene decreased steadily as the plants aged.

PROCEEDINGS OF THE NUTRITION SOCIETY

Vol. 15, No. 1, 1956

*Nutrition and home economics programme in Egyptian villages. M. A. Ross.—p. 30.

*Some aspects of cholesterol metabolism. G. S. Boyd and M. F. Oliver.—p. 52.
*Energy expenditure in relation to nutrition. O. G. Edholm.—p. 80.
*Daily energy expenditure by man. R. Passmore. —p. 83.
*Energy expenditure in the elderly. J. V. G. A. Durnin.—p. 89.
*Energy expenditure in athletic activities. H. R. Noltie.—p. 93.

Nutrition and Home Economics in Egypt. Studies have been made of the living conditions in Egypt. Food habits were observed. During the survey of families in the villages of Aghour Sougra, ample evidence that literacy is not an index of intelligence was found, for the village women, all of whom were illiterate, were able independently to express their needs and desires, which included help with child care and feeding, medical services, and schools for girls as well as boys. Of primary interest is the feeding and care of the young child. It is believed that by demonstrating satisfactory methods of feeding young children, including the preparation and storage of foods, the use of simple but improved home equipment, and habits of health protection, the village people can move toward better ways of living.

Cholesterol Metabolism. When cholesterol is included in the diet of mammals, absorption occurs to a variable degree depending on the species, the percentage of cholesterol in the diet, and other constituents. Experimental results suggest that in adult animals of any one particular species under physiologic conditions, the levels of cholesterol in plasma, liver, and carcass are maintained within fairly narrow limits despite the rapid turnover of this compound in most tissues of the body with the exception of the central nervous system. The homeostatic control of cholesterol metabolism involves equation of the variable cholesterol intake and hepatic biosynthesis with the changing cholesterol requirements of the organism and excretion of sterol.

Energy Expenditure in Relation to Nutrition. In calculating energy expenditure, the activities of the day and the time spent on each need be known. It is felt, however, that the results from measurements of energy expenditure cannot replace the information obtained in nutritional surveys. A knowledge of total energy expenditure is no aid in assessing the nutritional qualities of the diet as regards vitamin or mineral requirements or the balance between protein, fat, and carbohydrate. It would be an error to conceive of the measurement of energy expenditure as replacing a dietary survey, except for a figure of total caloric intake needed to balance output. Surveys of energy expenditure show how the calories are used. They provide for a comparison between the daily intake and expenditure.

Energy Expenditure in Man. This article points out the difficulties of assessing and measuring the three main components of energy expenditure in daily life, that is, the energy expenditure during sleep, at work, and not at work. The assessments are altered by variables such as climate, opportunities, and body size. It is suggested that man has been developed to live in a hard environment, where he is physically active and that the appetite was never designed as a food-regulating mechanism for persons who spend most of their lives sitting in a chair.

Energy Expenditure in the Elderly. In the present state of knowledge in this particular field of energy expenditure it is only possible to theorize. The impression is given that most elderly men might easily correspond, energetically, to young men of the moderately sedentary type. The great majority of people lead lives that are largely sedentary. Much more information on how elderly people spend their daily lives and how energetic a life they may be capable of leading is needed.

Energy Expenditure in Athletics. Most measurements of energy expenditure during violent activity have been made on subjects exercising in the laboratory. Until recently, almost no direct measurements had been made of the energy expended in playing competitive games and even now for no characteristically team games. In this paper, only the results of a few authors for a few activities have been arbitrarily selected as being fairly typical, or else as the only ones a cursory search disclosed.

PUBLIC HEALTH REPORTS

Vol. 71, April, 1956
*Sanitation of domestic airlines. W. H. Megonnell and H. W. Chapman.—p. 360.

Sanitation of Airlines. The cost for complimentary meal service on scheduled airlines in 1954 was more than $22 million. Foods and beverages for domestic aircraft are prepared in catering establishments or carrier-owned commissaries. Meats, cooked vegetables, and other hot comestibles are placed in casseroles, where they are kept hot either in large, preheated vacuum jugs or in portable, electrically heated ovens. Cold portions of meals, such as salad dressing, bread, butter, dessert, cream, and condiments, along with utensils and napkins, are placed on trays which are packed in carrying cases, with dry ice. Beverages are stored and transported in stainless steel, constant-temperature containers, which often are chilled by dry ice placed in a recessed tube in the lid of the container. Unconsumed foods and utensils are returned on the individual serving trays to the carrying cases. Tray carriers and waste containers are removed by catering personnel for emptying and cleaning, prior to re-use on later flights.

ROYAL SOCIETY FOR THE PROMOTION OF HEALTH JOURNAL

Vol. 76, May, 1956
*Fluoridation of water supplies. J. R. Forrest. —p. 244.

Fluoridation of Water Supplies. With a concentration of about 1 p.p.m., the incidence of caries was 60 per cent less among twelve-to fourteen-year-old children who lived in a district continuously from birth than among children of the same age in areas where there was no fluoride in the water. At this level of concentration, unsightly mottling of the dental enamel, frequently associated with excessive concentrations of fluoride, did not occur. Although the first fluoridation studies were planned to extend over ten years, the impressive results obtained much earlier led to its adoption in many other areas. The article discusses reports of fluoridation in various sections of the U. S. and explains how the studies were made.

SCIENCE

Vol. 123, April 20, 1956
*Studies on tryptophan and serotonin in patients with malignant carcinoid. S. Udenfriend, H. Weissbach, and A. Sjoerdsma.—p. 669.
Vol. 123, May 11, 1956
*Effects of intravenously administered fat on the serum lipoproteins. F. S. M. Herbst, W. F. Lever, and W. R. Waddell.—p. 843.

Tryptophan and Serotonin in Patients with Malignant Carcinoid. In these studies, it was apparent that that the carcinoid tumor is parasitic on the tryptophan stores of the patient and, as a result, less of the amino acid is available for formation of other metabolites. Weight loss and hypoproteinemia are common features of this condition, and pellagra has been reported in several cases. The complex manifestations of this disorder may be related to both a serotonin excess and a tryptophan deficiency.

Effect of Intravenous Fat on Serum Lipoproteins. It has been shown that daily intravenous infusions of a fat emulsion cause a significant decrease in the elevated serum lipids in patients with idiopathic hyperlipemia or primary hypercholesteremic xanthomatosis. Findings were obtained from electrophoretic analyses of serum carried out in eight normal human beings and in eight dogs before and after an intravenous infusion of emulsified fat.

AMERICAN RESTAURANT MAGAZINE

Vol. 40, May, 1956
*Defrosted facts on frozen foods. C. E. Blackburne.—p. 38.
*It will pay for itself.—p. 148.
*Three C's spell more efficiency.—p. 186.
*Check list for better mechanical dishwashing. —p. 222.

Frozen Foods. Frozen meat, poultry, fish, and vegetables, as well as many specialty items, allow the cafeteria manager to add listings to his menu without increasing the payroll. For reconstituting frozen food, and especially precooked frozen items, the steamer does a good job quickly with a fast temperature recovery. The only precaution to take when using an open pan is to cover the food with a sheet of aluminum foil, tucked or crimped under the flange at the top of the pan to prevent the food getting water soaked. If the food is of the breaded type, a dry

heat is recommended, and the electric oven is suitable. If the breaded item is covered with foil, remove the foil during the last 10 min. in the oven for a crisper dish. Frozen foods make feeding by cart in industrial cafeteria service easier as one operator learned. He uses a compartment plate of aluminum which contains entrée, potatoes, and a vegetable. The menu served from the carts is always one day behind the cafeteria offering since an amount necessary to fill the requirements of both the cafeteria and the carts is produced at the same time. As soon as the food has left the kitchen for the cafeteria, the cooks begin to work on the frozen plates for the next day. One worker spreads out the divided plates on the work tables. Each item is placed on the plate by a separate team of workers and so the plates are filled. An aluminum sheet is affixed and crimped around the edges to form a cover. The plates are placed on a dolly, wheeled into the freezer and remain there until 8 A.M. the next day. At this time they are placed into the heating compartments of the electric carts. By the time the carts reach the serving areas, the food is piping hot and combined with an attractive display of salads and pastries makes a satisfactory meal for the worker on the job.

New Dishwashing Department. A department store which operates four separate restaurant operations serves on an average of 1,800 meals a day with a peak of 2,600 on rush days. This means that 18,000 to 26,000 pieces of tableware must be washed daily. In this article, a dishwashing set up which reduced an average weekly dishwashing payroll of 205 hr. to 120 hr. is described. The investment of $12,500 in layout and equipment is expected to be returned in payroll savings in less than three years. A new "no rack, conveyor-type" dishwashing machine was installed with a garbage disposal unit, a sink, silver soak sink, stainless steel shelving for sorting glasses, wire glass racks, glass rack dollies, creamer racks, bus trucks and dish boxes, clean dish trucks, silver baskets, rinse-injector, and electronic dispenser. A report of how this dishwashing layout operates is given, with charts and pictures to show the dish handling efficiency.

Three C's for Efficiency. A newly opened table service and drive-in restaurant uses "color code," "conveyor," and "communications" to speed service. The restaurant features a twin-service kitchen on two levels. The upper portion of the kitchen, 3 ft. above street level, services the dining rooms, while the lower portion at street level serves the drive-in. Eight waitresses handle service in the two dining rooms which seat 112 persons. The menu is coded by number, and each waitress is assigned a distinctive color for her orders and a separate telephone to call them to the kitchen. Each waitress has a central service stand which includes two coffee pots, silverware, clean cups, clean glasses, place mats, butter, cream, salad dressings, saucers, and miscellaneous supplies in the cabinet below the sink. The latter provides warm water for cleaning tables and ice water for drinking. A lower conveyor belt carries soiled cups and glasses to and from the dishwashing department in each waitress' color-identified rack; in this way, she never runs out of cups and glasses. The six work areas in the kitchen are planned at right angles to conveyor belts so that all handling of orders or dishes is done with an effort-saving sidewise motion. Music for kitchen employees (as well as guests) makes working conditions as pleasant as possible.

Check List for Dishwashing. Here are eight quick points, fully illustrated, to check for better mechanical dishwashing results. Areas covered are scraping or prewash; proper racking; sprays; temperatures; detergent; drying; rejects; and daily clean-up.

COLLEGE AND UNIVERSITY BUSINESS

Vol. 20, May, 1956

*Our catering services really pay off. T. W. Minah. —p. 49.

Catering Service. Duke University, Durham, North Carolina, operates an elegant catering service for all special services outside of the regular dining hall food operation. The author, who is director of dining halls, tells why this service "pays off" at the university: (a) in good public relations for the university; (b) as a service to students, faculty, administration, alumni, and benefactors; (c) as a change of pace from the daily routine in foods and services; (d) as a service to well planned student activities, both religious and social; (e) as a training in social standards for the students as well as organizational training for student committees; (f) as a savings to students and faculty, both in time and money; (g) as a show window for the food department; (h) as a training and motivating influence for employees; and (i) as a source of additional revenue for the food service department.

HOSPITALS

Vol. 30, May 16, 1956

*We built in safety to insure a healthy safe working area for our food service employees. E. Ratliff.—p. 70.

We Built in Safety. The University of Kansas Medical Center built safety into its food service unit by: (a) providing maximum visibility in all work areas; (b) providing maximum ventilation: in addition to the large number of windows, a hood was installed with exhaust fan in the meat, vegetable, and soup preparation units, and the cafeteria dining room is air-conditioned in the summer with the air exhausted through the food preparation unit; (c) incorporating fire preventive measures in glazed tile walls and terrazzo floors; fire door in the dining room; and special electrical circuits to handle auxiliary equipment uses; (d) installing fire-fighting equipment in the kitchen; (e) designing food production area with a minimum of cross-traffic—an "island" plan with a wide aisle completely circling the food production unit; (f) providing for maintenance of clean, dry floors by means of two floor drains in each unit and steam-jacketed kettles installed 2 in. below the floor level; (g) planning the transportation of food and supplies to require the minimum of lifting, with a pass-through to the cafeteria lines; hydraulic lifts which move large orders of supplies to the receiving platform and dollies, movable racks, and bins to facilitate passing; (h) selecting equipment with guards and other safety features. In addition to these safety measures, employees are taught techniques of safety—how to use electrical equipment; proper use of sharp tools; and how to release steam from covered kettles. Every accident is reported immediately to the director of the department, and the employee is sent to employee health service for examination.

THE HOTEL MONTHLY

Vol. 64, May, 1956

*Entrées featuring shrimp combinations. J. E. Barr.—p. 36.

Shrimp Entrées. Shrimp combines well with many foods, is profitable to use, has distinctive flavor, and because of its wide flavor appeal is suitable for use in large quantity food service operations. It is now possible to buy shrimp raw in the shell; frozen, in the shell or shelled; and cooked, shelled, and ready to use. Breaded shrimp, both cooked and uncooked, is also available, as is a canned product. The breaded, ready-to-cook product is graded in size for easy portion control. Included here are succulent shrimp recipes, some from a successful hotel chef: broiled shrimp au beurre provencale; shrimp Zaragonzana; French-fried butterfly shrimp; golden parrot baked stuffed shrimp; shrimper buns; and cocktail and shrimp sauces. Instructions for thawing, boiling, and shelling shrimp are given.

INSTITUTIONS

Vol. 38, May, 1956

*Steam takes pressure out of food production. A. Macfarlane.—p. 6.

*How to analyze food service capacity. P. Dukas. —p. 18.

*Guide to higher efficiency in mass-feeding kitchens. H. P. Caleva.—p. 30.

*Plan to improve food service facilities. F. Schmid. —p. 42.

*Food service designed to fit needs of many-sided operation. S. M. Hartt.—p. 160.

*Food-flattering china designed to enhance meal appeal. W. C. McBurney.—p. 178.

*Analyze each job for labor budget control. E. J. Regnier and W. J. Storm.—p. 184.

Food and beverage service worker's manual.—p. 191.

Steam Cooking. Steam cooking not only saves time, labor, and money but also important nutrients, color, texture, and the attractive appearance of food. Most of the steam-cooking equipment and other steam units on the market today are: units operated by steam supplied from a central steam system in which the pressure in the steam boiler is reduced to comply with the maximum

working pressure of the unit by a reducing valve on the line to which the equipment is attached; or self-contained units where steam is produced by means of a built-in generating unit heated by either gas or electricity. When the steam-jacketed kettle is used, the water enters the kettle from a cold water supply through a faucet mounted at the back of the kettle. The steam is turned on, and the water is brought rapidly to the boiling point. Food to be cooked is put in the kettle and the water again quickly reaches boiling. The steam pressure is regulated, and the food is left to cook. When meat is roasted in these kettles, the pressure can be increased to sear the meat and then reduced to cook it at low temperatures. Steam-jacketed kettles are available in various sizes with capacities from 1 to 100 gal. Small trunnion kettles and small compartment steam cookers are almost indispensable units in many food operations. An interesting steam-jacketed kettle is a model that carries its own water and makes its own steam. Distilled water is hermetically sealed in the steam jacket at the factory. Almost all foods, except those cooked by dry heat, in deep fat, or sautéed, can be cooked in the steam cooker. Operators are finding that potatoes for French frying can be successfully blanched in the steam cooker in minimum time and with a saving of fat. Steam can also be used in some baking operations.

Analyzing Food Service Capacity. A food service manager tells how to determine the location, seating capacity, and the amount of money to invest in an operation. First, he determines how much net profit he wants to make from his investment. Then he multiplies this profit by four or five, depending on the type of operation in mind; the resulting sum determines the maximum investment. Before he selects a location, he considers four basic factors: the volume of daily sales needed to give the desired profit, the number of meal periods, the basic menu pattern, and the type of restaurant planned. To determine the seating capacity, he considers the speed of the serving line and the seat turnover per peak period in a cafeteria operation. He multiplies the number of minutes in that period by the speed of the serving line, divides this by the seat turnover, and adds a safety factor. The safety factor is added to account for seats that might not be utilized by guests because one person is seated at a table for two, and so on. To figure the number of seats for a table service operation, he determines the customer flow for the particular type of operation. Having figured a necessary daily volume and from that an average check for lunch or dinner and, calculating that 40 per cent of the dollar volume would accumulate during the first serving period and 60 per cent during the second period, he arrives at a figure for both periods. Then he determines the busiest period and seat turnover and calculates the seating capacity plus a 15 per cent safety margin.

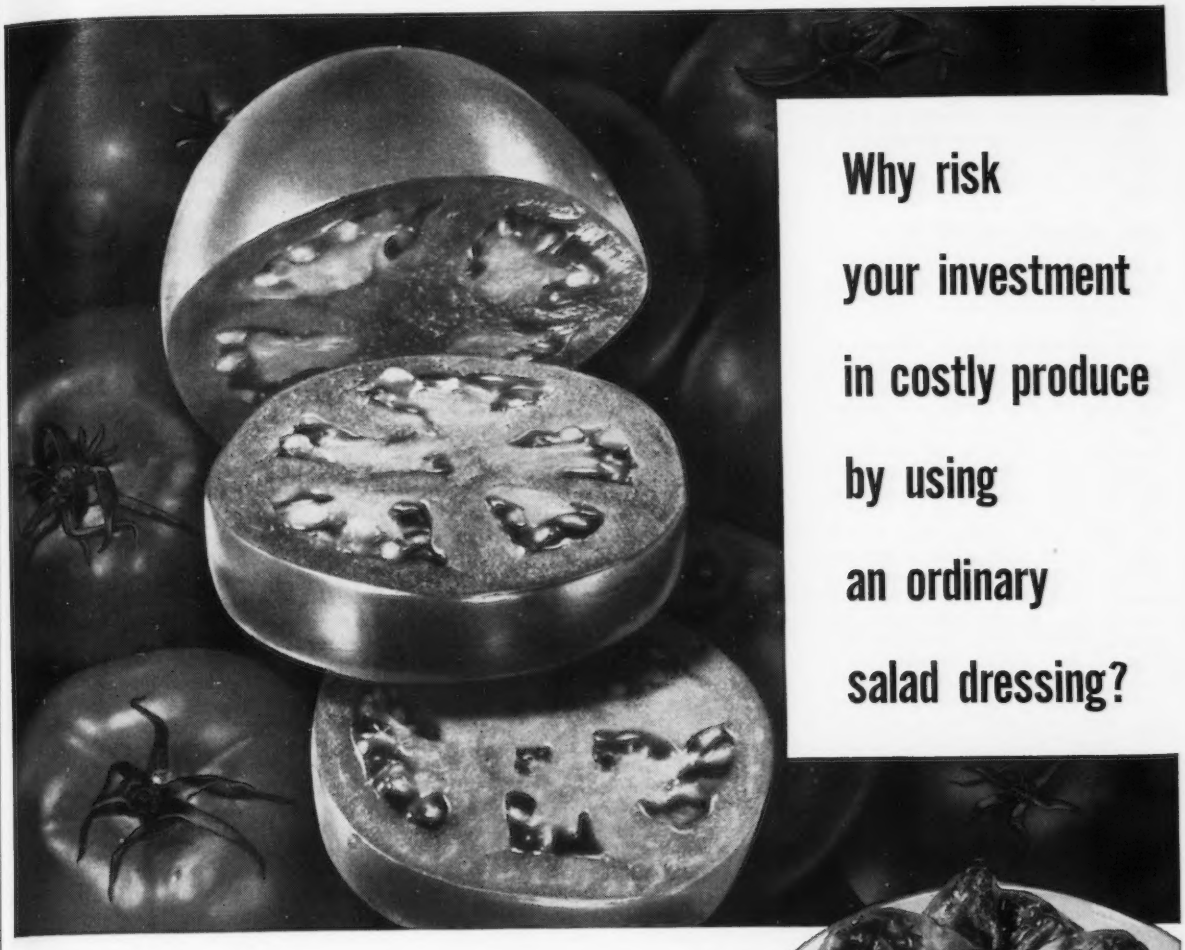
Guide to Higher Kitchen Efficiency. Regardless of the size of a food operation, there seldom is a need for a separate food production kitchen. Divide the kitchen into four pick-up stations: the preparation steam table, fry, broiler, and pantry. The fry station and roasting function can easily be combined, with the fry cook starting the roast first thing in the morning. The preparation cook can bring up the prepared menu items in the morning and should be ready to serve by 11:30 A.M., at which time the meal preview is set up. Central preparation requires arranging all the steam kettles adjacent to the steam table area. The preparation cook lines up the steam table and is dish-up man during the serving period. In most kitchens, the broiler station need not be opened until just before lunch. Successful operators establish a "par" stock of steaks, chops, and other broiler items in the broiler refrigerator, with the butcher rebuilding the stock to par each morning. Pantry work is mostly a question of lining up. The vegetable cooks should prepare as well as cook all vegetables. A job description and work load distribution for each station under formula cooking (kitchen supervisor, [dietitian]; supervising chef; preparation station [noon dishup]; preparation dinner cook [dinner dishup]; fry station; short order cook [fry station]; broiler station; cook apprentice; and vegetable preparation conclude this first installment in a series.

Improving Food Service Facilities. Knowing the high cost of building today, study the best possible long-range program for effective utilization of space, considering both present and future requirements as affected by relative growth of the community and competition. Explore ideas such as these for increasing volume: a gift shop displaying high gross profit costume jewelry; new or remodeled food rooms, with design related to a theme and a name; possibilities for increasing party and banquet business. One of the most important trends in successful food operations is exposed activity. Ideas in this category include exhibition cooking; smartly designed broiler stations; traveling carts for relishes, pastries, and desserts; mixing of dinner salads at tables; smorgasborgs and buffets; flaming desserts; and so on. Create a cozy, low-ceiling effect with an informal atmosphere. Next, study the three main items of expense: food, payroll, and controllables. Analyze how the number of employees might be reduced and/or their productivity increased. Get the total operation on one floor if it is now on two or three levels. Develop a layout that follows modern manufacturing methods which bring in the raw materials at one end and use production line methods for storing, preparation, and service without back-tracking. Study materials' handling and transportation to determine where conveyors, chutes, trucks, dollies, and racks for the handling of materials or dishes can eliminate labor. Install garbage disposal units in every department. Cut down distance of travel for employees. Have china, glass, and silverware presorted before it is sent to the dishwashing department. Use flight-type dishwashing machines with rinse injectors to handle all wares, including glasses, in the same machine. Semi-concealed booster stations in dining rooms save that extra trip to the kitchen and speed service. Make sure working equipment is the right height and width to reduce fatigue.

Food Service in Student Unions. The food department as a part of the student union program is evaluated, with the aid of an organization chart from a state university student union and a statement of supervisory responsibilities. A table showing types of food service provided by fifteen student unions in the Middle West is included.

Food-Flattering China. When proper complementary colors are used as a background for food, they have a favorable psychologic effect on the person being served. Recognizing this, styles in chinaware have undergone radical changes. Emphasis is being placed on the use of colors that have eye appeal and contrast with the food to make even the best meal look better. One china manufacturer has found that colors that combine best with food are traditionally the colors of good food—the red-brown color of steaks, chops, and roasts; the green of fresh garden vegetables; the pale orange of tree-ripened fruits; accents of yellow like butter; the light browns which suggest a bread crust. Food service operators interested in increasing patronage should check the important role that color can play in contributing to the success of an operation.

Job Analysis. The importance of job analysis cannot be over-emphasized because it serves as the basis for the entire budgetary program. It not only helps to make preliminary recommendations on changes and/or improvements but also presents something tangible for the intermediary discussions with management throughout the entire program. In obtaining the job analysis, the first step is to discuss with management the jobs to be studied and to determine their relative importance. The second step is to alert the department heads in the specified areas and request them to inform their personnel of the importance of the study. The third step consists of a series of discussions with the department heads to orient them in the role they will play. Next, the analyst should observe the over-all department operations to get the feeling of the organization. He can then begin to observe the individual operations. The final step is actually to write the individual job analysis covering the following points: department, name of job holder, title of job, supervisor's name and title, daily routine functions, periodical tasks done regularly, and special or fill-in tasks. The analyst is now ready to compile the basic data required in the final step. First, it is necessary to determine the basic unit of output to be used for specifying standards. Having determined the basic data, the analyst should bear in mind the eventual use of these data for final presentation and should



Why risk your investment in costly produce by using an ordinary salad dressing?

For only 1/10¢ more per serving you can use top quality

Miracle Whip

You use choice tomatoes in your salads so why risk spoiling the salad *and* customer dissatisfaction by using just any salad dressing. For only 1/10¢ more per serving you can dress your salads with Miracle Whip . . . the nation's finest!

Here's what you get when you use Miracle Whip—

• *For only 1/10¢ more*—you get a dressing that's creamy-thick, rich and full-bodied . . . that won't water off or break down in use!

• *For only 1/10¢ more*—you get a dressing that keeps salads fresh all day long . . . with no discoloration!

• *For only 1/10¢ more*—you get a dressing that *your customers* themselves use 20 to 1 over other brands!

Kraft Foods Company
500 Peshtigo Court, Chicago 90, Ill.

The Nation's Taste is Your Best Buying Guide

gather facts accordingly. All items should be described and notes made so that either verbal or written clarification of all figures can be made. As the data are compiled, they must be carefully reviewed and interpreted. This is a critical step, since the compilation and use of these data preview the final establishment of the job standards.

THE MODERN HOSPITAL

Vol. 86, May, 1956

*Chicken makes good eating and economics. J. M. Rock and D. H. Zumsteg.—p. 112.

Chicken Economics. Broilers are a good buy this season and are suitable for baking, frying, and oven-frying in addition to broiling. Portion control packing of chicken is vaulable in food cost control and enables the dietitian to purchase the smaller sizes for children and certain patients, and larger portions for specific wards and staff. Cut-up chickens are economical where kitchen labor is short. Cut-up pieces facilitate a feeding problem in some cases, i.e., patients can manipulate a chicken leg, for example, and get solid meat. Fresh-killed poultry should be aged for at least 24 hr. (under refrigeration) between the time killed and time cooked to improve flavor and tenderness. Broiling, like frying, can be accomplished in two stages. Both can be finished off in the oven, which assures thorough cooking of the meat, reduces the broiler or fryer load, and eliminates broiling or frying so far in advance that the poultry dries out. Quantity recipes for chicken croquettes, creamed chicken, and savory baked broilers are given and instructions for broiling, oven-frying, roasting, pressure cooking, and braising of chicken are presented. A new form of cookery, microwave cooking, increases the speed of chicken processing: contact with the food converts the microwave energy into heat so that the inside as well as the surface is heated instantaneously. Roasting time for a 3-lb. chicken is 9 min.; and a pre-seared, half-broiler cooks in 3 min., according to the manufacturer of the microwave ranges. This type of cookery can spread the work load and reduce peak rushes.

PERSONNEL JOURNAL

Vol. 35, May, 1956

*Some problems of communication. J. H. Epstein.—p. 12.

*Foreman try a new way. M. Wright.—p. 20.

Communication Problems. The first difficulty in communications is the general lack of ability of people to express themselves, or their lack of ability to receive. Any person attempting to communicate must first know what he wants to convey. But we must be concerned also with the employees' qualification to receive communication, to have insight into what is intended by the message, and to "echo" this insight back to the supervisor. Important aspects of the communication problem include timing and choice of communication. The message must also be received in the intended sense with the meaning clear. Organizational structure presents another communication problem, and many organizations unwittingly do not provide for three-way communication—up, down, and across. A final communication problem relates to human relations. Too often we hear rather than listen and too often we communicate to rather than with people. It would be best to listen with empathy, putting yourself in the other's shoes. Judgments which people tend to place on ideas and on other people also interfere; a mental block toward an individual, no matter what is communicated by that person, can immediately wreck any attempted exchange between them. Communicate by questions, too. It is easy to tell people what we think they should do, but how much more effective for the employee's development if we come back with a question. To improve communications in an organization, create a climate of participation while at the same time maintaining discipline. It is often well to have a full discussion of a problem before issuing a communication.

"Golden Rule" at Work. The Foremen's Club of a midwest manufacturing company compiled a set of "ten guiding principles" which are credited with improving employee morale, reducing turnover, and reducing accidents. The author suggests that these principles, thoroughly understood and faithfully followed, could work wonders in many other companies. They are: (1) Put yourself in the other fellow's shoes. (2) Give clear and concise instructions. (3) Be fair and give credit and recognition. (4) Handle complaints personally and promptly. (5) Develop inquisitiveness about the job. (6) Keep your promises. (7) Develop and use good judgment. (8) Develop true humility. (9) Learn to know your employees. (10) Lead; don't command. As the program developed at this company, it became apparent that the whole process on which the foremen had embarked was the "Golden Rule at Work." To fill in the gaps in their knowledge of the subject, they began a "Confidence Project"—for they knew that the keystone in human relationships is confidence, yet could find no definition to guide them. Teams of foremen, armed with tape recorders, interviewed prominent businessmen, educators, and clergymen of all faiths. They asked for guidance about the factors which build confidence and the factors which destroyed confidence.

WHAT'S NEW IN HOME ECONOMICS

Vol. 20, May, 1956

*Survey shows home food-preservation practices.—p. 18.

*When a baby learns to eat. F. L. Beinert.—p. 20.

Recent research in freezing. E. Beveridge.—p. 26.

Home Food-Preservation Practices. More homemakers can fruits and vegetables than freeze them, and all forms of food preservation are practiced to a greater extent on the farm than in the city, according to a 1955 survey. Also, greater quantities of food are processed by farm homemakers. The survey also revealed that fruits were canned by more homemakers and in greater quantities than were vegetables in both farm and city groups, with peaches the most popular individual fruit canned. Applesauce, pears, cherries, plums, and pineapple were also canned, in that order of importance, and significant amounts of berries also. Vegetables were canned by more farm families than city groups, with tomatoes the most popular. Green beans were next in popularity, followed by peas, corn, beets, and Lima beans. More farm homemakers froze fruits than did town and city homemakers, but for all three groups, berries were frozen to the largest extent and by the greatest number of homemakers. Strawberries were most popular, followed by raspberries, blueberries, and blackberries. When peaches were frozen, they were almost as popular as strawberries. Cherries, apples, raspberries, other berries, and pineapple were next in importance. Almost 50 per cent more farm families froze vegetables than did the town and city groups combined, and all vegetables frozen by farm families were home-produced. Corn was most popular with all groups. More grape jelly was made by all homemakers than any other variety. Raspberry, apple, and plum were next. Strawberry was the most popular preserve reported, with peach a close second. In addition, homemakers reported they made raspberry, plum, grape, cherry, blackberry, and pear preserves, and some apple butter.

Infant Feeding. The modern method for infant feeding depends on the rhythm of a child's digestive system to set the feeding schedule. It is a mutual give and take between the baby and his family, and should encompass the parent's response to the infant's demand for food and the infant's adaptation to the parent's demand for cooperation. When the baby is still hungry after taking his quota of milk and his digestion is good, he is ready for solids regardless of his age. Moreover, babies take to new food experiences more easily at an early age because they have not become opinionated nor has the fondness of an all-liquid diet become a fixed habit. Food must be nutritional, suitable in form, easily digested, and carefully selected for quality so that he gets full value from the small amounts he is capable of eating. A baby's own taste may dictate an early preference for one or two foods and make it necessary for him to learn to like others but his likes and dislikes are strongly influenced by the way his food is prepared. It should be free from lumps, warmed to just the right temperature, fresh-tasting, and attractive looking. He may heartily resist certain foods because they are too bland (a bit of salt will help), too sour (add a little sugar), too sticky (thin down a bit), or too thin and runny (make a bit thicker). When he is ready for mashed and chopped foods he is likely to be more tolerant of small lumps if he picks one up in his fingers and feeds it to himself than if the lumpy food is unexpectedly slipped into his mouth.

An Important Career from Every Angle
Serve as an ARMY DIETITIAN

As an Army Dietitian, your career will be more complete from every angle.

Serve Humanity . . . in modern, well-equipped Army hospitals. Work side by side with a top group of dedicated men and women. Further your professional goals through outstanding specialized training in the latest techniques and developments in your field.

Serve your Country . . . with the rank, pay and prestige of a commissioned officer in the United States Army. Perform a job directly benefiting the nation—a job so important you start as an officer.

Serve Yourself . . . through the many personal advantages of an Army career. Meet new people who share your interests and ideals. Enjoy the chance for exciting travel, both at home and in foreign lands. Count on a 30-day paid vacation every year.

★

Get all the details . . . Find out how you can have this important career from every angle—how you can serve humanity, country and self! Fill out this coupon and mail it today.

U. S. ARMY
Medical Specialist Corps

D56-4

The Surgeon General, United States Army
Washington 25, D. C.
Attn: Personnel Division

Please send me further information on my opportunities as an Army Dietitian.

Name_____

Address_____

City_____ State_____

My present status is (check one)

STUDENT:
——High School
——College
——Dietitian

GRADUATE:
——College
——Dietitian

OTHER:

Annual Meeting Glimmers

Milwaukee—October 9-12, 1956

THINGS TO ANTICIPATE

Current research on the dietary control of dental caries, conducted by Paul H. Phillips, Ph.D., and F. Taketa of the University of Wisconsin, will provide an interesting sequel to the report given by Dr. Phillips in St. Louis.

A.D.A. audiences will welcome the return of Olaf Mickelsen, Ph.D., who spoke at the Annual Meeting in 1954. Dr. Mickelsen, of the National Institutes of Health in Bethesda, will discuss the question "Is Toxicology Enough in a Food Protection Program?"

The subject of sanitation will receive the attention of W. L. Mallmann, Ph.D., Professor of Bacteriology, Michigan State University. His specific topic will be concerned with cleaning materials and equipment.

The session devoted to kitchen layout and equipment will offer two interesting points of view, those of John W. Hargrave, who is well known to dietitians, and Melvin Dykman, of Dykman's Restaurants in Madison. Mr. Hargrave will suggest "How to Communicate Ideas to the Architect," and Mr. Dykman will discuss layouts in his establishments.

Katherine Hart of Michigan State University will offer useful ideas concerning cost control in relation to quality food.

Appearing at the Wednesday evening session will be William J. Darby, M.D., Head, Departments of Medicine and Biochemistry, Vanderbilt University. His topic will be "Nutritional Deficiency Diseases of Today."

A session devoted exclusively to the discussion of proteins will be opened by Mark D. Hegsted, Ph.D., Associate Professor of Nutrition of the Harvard University School of Public Health. His paper will be concerned with protein allowances for infants and children. Sharing the same platform, May S. Reynolds, Ph.D., University of Wisconsin, will provide current thought on amino acid requirements in pregnancy.

WISCONSIN'S HERITAGE

"Mahon-a-wan-her," exclaimed the Pottawatomie Indian when he saw the area of Wisconsin now known as Milwaukee and its surrounding territory. The term means rich, beautiful land.

The area was Indian territory at the time of Jean Nicolet's fur trapping trip in 1634. An act of Congress, when Andrew Jackson was in office, created the Wisconsin Territory. In 1848 it became part of the Union, as the thirtieth state.

The name "Wisconsin" also had its origin with the Indians. It springs from the word "Ousicousin" which means meeting of the waters. Because of the many misspellings and mispronunciations, it was changed to Wisconsin by an act of Congress.

Today nearly 12,000 Indians live in Wisconsin on five reservations totaling over 600,000 acres. The Menominee, the largest tribe, has a membership of 3,200. Its reservation, which covers 234,000 acres, is located northwest of Green Bay in Shawano and Oconto counties.

The Chippewa Indians contributed the words "Shawano" and "Oconto" to our vocabulary. The former refers to the southern boundary of the Chippewa, while the latter, Oconto, is interpreted to mean "he watches from ambush."

In addition to being a tribal name, "Sauk" in the Indian language refers to yellow earth. The term was used in the areas north of Milwaukee in Ozaukee County, where the village of Saukville and the Sauk Creek are found today. It is descriptive of the type of soil found in sections of this county. Ozaukee is translated "mouth of the river people" and is a fairly accurate description of the geology, because many rivers and streams follow through the county into Lake Michigan.

Milwaukee affords a large collection of historical relics, including Indian mounds which are found in both Waukesha and Dane counties west of Milwaukee.

A SHOW WORTH SEEING

Eight weeks after the mailing of the A.D.A. exhibition brochure, 94 per cent of the booth space had been assigned. Old-time friends of the Association and new ones will be represented by the estimated 180 companies and organizations which will feature their products and services in Milwaukee.

Intermission periods between sessions, which met with great approval last year, are being scheduled again. Wednesday afternoon from 2:30 to 5:30 o'clock is being reserved especially for the visiting of exhibits.

The familiar hospitality terrace of *Standard Brands*, always popular with A.D.A. members, will be conspicuously located in the arena. Basking in the friendly, garden atmosphere, visitors will enjoy cups of Chase & Sanborn Hotel and Restaurant Coffee and Tender Leaf Brand tea.

The *Kellogg Company* this year is celebrating fifty years of cereal making. For its golden anniversary, fifty recipes, one for each year, have been collected for your use. You may register at the booth for a copy of the booklet.

A new milk pudding in three flavors—vanilla, butterscotch, and chocolate—will be introduced by the *Webster Van Winkle Corporation*. Insofar as is known, this is the only milk pudding on the market.

Latest developments in the fresh produce industry will be shown in a slide-film presentation of *The United Fresh Fruit & Vegetable Association*. Free materials concerning fresh fruits and vegetables and their relation to nutrition will be available.

Electronic units for improving the effectiveness of dishwashing operations are to be highlighted by *The Diversey Corporation* of Chicago. Demonstrations will be made of cleaners, disinfectants, and other specialized products especially developed for the kitchen.

Copies of "A Resumé of the Iowa Breakfast Studies," which is a brief of the twenty scientific papers published from the findings of the recent studies, will be furnished by *Cereal Institute, Inc.*

Mead Johnson & Company is planning to display Sustagen, "a high protein, high calorie food for therapy."

The *American Institute of Baking* will present for the first time figures on the contribution of enriched bread to the diet. The Institute's nutrition education and quantity recipe services will be featured.

"Many Happy Returns" and "A Girl and Her Figure" are two of several current publications in the wide selection of nutrition education materials which the *National Dairy Council* will have for you to examine.

The *Paper Cup and Container Institute, Inc.* will feature hot and cold drink cups, dishes, food containers, portion cups, and plates manufactured by its eighteen member companies.

In addition to presenting a working scale model of the Subveyor and two Olson Dish Tray Conveyors, the *Samuel Olson Mfg. Company, Inc.* will also illustrate some of its representative hospital installations with color transparencies.

Individual service varieties will claim attention at the *National Biscuit Company* booth. On view will be handy little envelopes of Cookie Treats, Waverly Wafers, Dandy Oyster Crackers, the Premium Saltines, and Ritz Crackers.

Dietitians with food service problems are invited to discuss them with specialists at the *Mealpack Corporation's* exhibit.

A refresher of chilled apple juice will be yours when you stop at the *Processed Apples Institute* booth. You are invited to register for quantity recipes.

The *Quality Bakers of America Cooperative, Inc.* will display samples of their Sunbeam bread, cake, rolls, and doughnuts.

A nutrition exhibit emphasizing the importance of a good breakfast will be presented by the *National Live Stock and Meat Board.*

to help you solve
many diet problems

Sustagen

therapeutic food for complete nourishment

A dilemma frequently confronting the dietitian arises from the fact that the nutritional needs of sick or injured patients are increased at a time when appetite and the ability to eat are often impaired. Further complicating the problem of diet in illness are physiologic disturbances which require the restriction of certain valuable nutrients—sodium, cholesterol, purines, etc.—common in many foods.

Type of Diet	Amount of Sustagen	Calories	Protein Gm.	Carbohydrate Gm.	Fat Gm.	Comment
Low purine diet	Sustagen, 530 Gm.	2050	124	350	19	no purine nitrogen; 42 mg. uric acid
Low cholesterol diet	Sustagen, 530 Gm.	2050	124	350	19	150 mg. cholesterol
High protein, low fat diet	Sustagen, 580 Gm.	2250	137	385	20	contains all amino acids in well balanced amounts
Liquid diet	Sustagen, 540 Gm.	2100	127	360	19	viscosity suitable for tube feeding
Bland diet (Peptic ulcer)	Sustagen, 570 Gm.	2200	134	377	20	buffering capacity of Sustagen is effective and prolonged
Liberalized low sodium diet*	Sustagen, 465 Gm.	1800	110	310	16	980 mg. sodium

*Note that the sodium content of Sustagen limits its use when dietary restriction of sodium must be severe.

Sustagen® is the only therapeutic food which contains all known dietary essentials, requiring only the addition of water. In addition to nutritional qualities Sustagen was designed to meet many physical and biochemical requirements of therapeutic nutrition. Thus Sustagen may be used, by mouth or by tube, as the only source of food or to fortify the therapeutic diet.

Sustagen is supplied in powder form in 1 pound, 2½ pound and 5 pound cans. One pound provides 1750 calories, including 105 Gm. protein.

MEAD SYMBOL OF SERVICE IN MEDICINE

MEAD JOHNSON & COMPANY • EVANSVILLE 21, INDIANA, U.S.A.

News Notes

A.D.A. Officers for 1956–57. The following will be the elected officers of The American Dietetic Association for the coming year:

PRESIDENT—Lucille M. Refshauge, Hartford Hospital, Hartford, Connecticut

PRESIDENT-ELECT—E. Neige Todhunter, Ph.D., Dean, School of Home Economics, University of Alabama, Tuscaloosa

SPEAKER OF THE HOUSE OF DELEGATES—Adelia M. Beeuwkes, School of Public Health, University of Michigan, Ann Arbor

SPEAKER-ELECT OF THE HOUSE OF DELEGATES—Geraldine M. Piper, University of Tennessee, Knoxville

TREASURER—Doris Johnson, Ph.D., Grace-New Haven Community Hospital, New Haven, Connecticut

SECRETARY—Helen Hawver Anderson, Stanford University Hospitals, San Francisco

DELEGATES-AT-LARGE

Ercel S. Eppright, Ph.D., Iowa State College, Ames—1957

Helen A. Hunscher, Ph.D., Western Reserve University, Cleveland—1957

Beulah Hunzicker, Presbyterian Hospital, Chicago—1958

C. Frances MacKinnon, University of North Carolina, Chapel Hill—1958

Fern W. Gleiser, University of Chicago—1959

NOMINATING COMMITTEE

Georgraphic Area I—Geneva L. Marble, Boston Lying-In Hospital, Boston

Geographic Area II—Edith A. Jones (Chairman Pro-Tem), Clinical Center, National Institutes of Health, Bethesda, Maryland

Geographic Area III—Bertha Biltz, St. Luke's Hospital, Cleveland

Geographic Area IV—Mary Ellen Dambold, Baylor University Hospital, Dallas

Geographic Area V—Mary Ellen Johnson, Colorado State Hospital, Pueblo

50 Years of Food Protection. In June, the 50th Anniversary of two major events in the protection of the public were celebrated—the 50th anniversary of the signing of the original federal Food and Drug Act and the 50th anniversary of the first law requiring federal inspection of meat. The major commemorative event in a year-long program of celebration was a national meeting in Washington on June 27, which was sponsored jointly by the Association of Food and Drug Officials of the U. S., The Food Law Institute, Inc., and the Association of Official Agricultural Chemists, in cooperation with the U. S. Departments of Health, Welfare, and Education and of Agriculture, through the Food and Drug Administration and Meat Inspection Branch, respectively.

A special commemorative stamp honoring Dr. Harvey W. Wiley, the "father" of the national pure food and drug laws, has also been issued, and a new exhibit in honor of the occasion has been prepared jointly by the Smithsonian Institution and the Food and Drug Administration (see page 646).

Dietitians Honored. *Edith Jones*, Clinical Center, National Institutes of Health, Bethesda, Maryland, on May 11 received one of six distinguished Service Awards presented on the occasion of the Silver Anniversary of the University of Alabama's School of Home Economics. Her citation reads: "*Edith Jones*—alumna, dietitian, nutritionist, and home economist. You have given professional leadership to the field of dietetics and have made adequate and efficient food service an effective agent in helping restore the sick to health. You have helped to popularize nutrition through various media. The School of Home Economics of the University of Alabama is proud to bestow this Silver Anniversary Award."

Dr. Doris H. Calloway, Nutritionist, Chicago Quartermaster Food and Container Institute for the Armed Forces, recently received an "Honorable Mention Quartermaster Technical Directors' Award" in recognition of her research on the nutritive properties of processed, stored rations. Dr. Calloway is the first woman from the Quartermaster Institute to receive this recognition. In her work with the Institute, she has identified factors contributing to poor consumption of packaged rations and to decreased physiologic availability of nutrients. Application of these findings should result in improved nutritional status of military personnel as well as monetary savings through reduction of waste and loss of nutrients. Presentation of the certificate was made by Brig. Gen. Charles G. Calloway, commanding general, Headquarters, Quartermaster Research and Development Command, Natick, Massachusetts.

Institute for Hospital Food Supervisors. Fontbonne College, St. Louis, Missouri, offered its first "Institute for Hospital Food Supervisors" from June 18 to July 6. The Institute, which was sponsored by the Catholic Hospital Association, was the first in a three-year program which will extend through 1958. The program is intended for those who have not been trained as dietitians and yet are fulfilling certain of the duties and responsibilities of dietitians. The institutes will be conducted by outstanding authorities, with the program divided as follows: Summer, 1956—personnel management, menu planning, modern trends in food preparation, and sanitation; Summer, 1957—nutrition as related to dietary planning, diet therapy, purchasing and food cost control, and portion control; Summer, 1958—organization and management, equipment and layout, recipe development and standardization, and administrative responsibilities. The Institute will be in session for three weeks for each of the three summers. Those completing all three institutes will be awarded a certificate from the Catholic Hospital Association. The specific aims of the Institute have been listed as follows: (a) to give to those who have not had an opportunity for formal training in the field of dietetics a knowledge of modern trends in institutional food service; and (b) to develop a realization of the importance of acquiring the proper attitude toward the position of food supervisor. Further details may be obtained from Sister Mary Teresine, C.S.J., Fontbonne College, Wydown and Big Bend Boulevard, St. Louis 5.

Dr. Williams Honored. On April 23, Dr. Robert R. Williams, on the occasion of his seventieth birthday and the twentieth anniversary of his synthesis of thiamine, was honored by a ceremonial dinner in Washington, D. C. The event was sponsored by the American Institute of Baking. Tributes to Dr. Williams were paid by Dr. Norman Jolliffe, Director, Bureau of Nutrition, New York City; Dr. William H. Sebrell, former Director, National Institutes of Health, Bethesda, Maryland; and Dr. Russell M. Wilder, Emeritus Member, Section of Medicine, Mayo Clinic. A bound book of letters containing expressions of admiration and respect from some hundred persons was presented to Dr. Williams. In paying tribute, Dr. Sebrell said, "Dr. Williams represents the best that religious freedom, intellectual freedom, and political freedom can produce. In the troubled times that we see ahead of us in the world, if this country can continue to produce men of Dr. Williams' caliber, we have nothing to fear, and the world will be a better place for us all."

Plentiful Foods MONTHLY LIST

Plentiful foods listed for July by the U.S.D.A. will be:

Protein foods

Chickens—broilers and fryers
Milk and other dairy products, including ice cream
Tuna, canned in oil
Turkeys

Other foods

Cranberry sauce, canned
Lemons, fresh and processed
Peanut butter
Plums, fresh
Vegetables, summer

Symposium on Amino Acids and Proteins. On May 21, the Council on Foods and Nutrition of the American Medical Association; the Los Angeles

Jell-O is a registered trademark of General Foods Corporation

A PRODUCT OF GENERAL FOODS

Secrets of

Salad

*Success**

Summer appetites come running for Jell-O salads! They're cool, tempting, freshly satisfying as no other salad can be in summer. Jell-O salads just naturally sell on sight! For all their refreshing goodness, they're quick and easy to prepare, low in cost.

*Write General Foods Institutional Kitchens for recipes for the tempting salads you see here, and many, many others.

GF INSTITUTIONAL PRODUCTS DIVISION

GENERAL FOODS CORPORATION
White Plains, New York

County Medical Association; and the University of California at Los Angeles, School of Medicine jointly sponsored a symposium in Los Angeles on "The Relation of Proteins and Amino Acids to Nutritional Health." The program follows:

"Nitrogen Balance and the Nutritive Value of Proteins"—James B. Allison, Ph.D., Rutgers University, New Brunswick, New Jersey
"The Role of Vitamins in the Metabolism of Amino Acids"—Otto A. Bessey, Ph.D., University of Texas School of Medicine, Galveston
"The Role of the Digestive Tract in the Utilization of Proteins and Amino Acids"—E. S. Nasset, Ph.D., University of Rochester School of Medicine, Rochester, New York
"The Amino Acid and Protein Requirements of Infants"—E. L. Pratt, M.D., University of Texas Southwestern Medical School, Dallas
"The Role of Hormones in Protein Metabolism"—Robert E. Olson, M.D., University of Pittsburgh
"Malnutrition Due to Protein-Deficient Diets"—Nevan S. Scrimshaw, M.D., Institute of Nutrition of Central America and Panama, Guatemala City

Friends of the Land. On June 25, 26, and 27, the 15th National Nutrition Institute of the Friends of the Land was held in Chicago. Co-sponsor of the meeting was the Committee on Nutrition, Illinois State Medical Society. Some of the papers on human nutrition which were of interest were:

"The Diet after 50"—Melvin M. Chertack, M.D., Chicago
"Proteins in a Balanced Diet"—Edwin F. Neckerman, M.D., Elmhurst, Illinois
"Food Supplements in Nutrition"—E. T. McEnery, M.D., Chicago
"Infant Feeding for Health"—William Raycraft, M.D., Oak Park, Illinois
"The Influence of Soil Minerals on Human Nutrition"—John J. Miller, Director of Biological Research, J. R. Roerig Company, Chicago
"The Nutritional Status of People Throughout the World—Geography of Diseases, A Study in Nutrition"—Jacques M. May, M.D., Head, Department of Medical Geography, American Geographical Society, New York
"Pregnancy and Lactation and the Need for Proper and Adequate Dietary"—John Dale Owen, St. Mary's Hospital, Milwaukee
"Nutrition for Older Girls and Boys"—Anne dePlanter Bowes, Director, Bureau of Nutrition, Pennsylvania Department of Health, Harrisburg
"The Impact of Climate upon Growth and Maturity and Dietary Requirements"—Clarence A. Mills, Professor of Experimental Medicine, University of Cincinnati

AMSC Change. The Army has announced the appointment of Major Helen M. Davis, AMSC, as Chief, Dietitian Section, Army Medical Specialist Corps, effective July 16. With this appointment, Major Davis will be promoted to the temporary rank of Lieutenant Colonel. She has served as Assistant to the Chief of the Dietitian Section from 1949 to 1953, and more recently has been Chief, Food Service Division, Tripler Army Hospital, Honolulu, Hawaii. She will succeed Lt. Col. Hilda M. Lovett, who completes her four-year statutory appointment in July, and will become Chief, Food Service Division, Walter Reed Army Hospital, Washington, D. C.

Change at Michigan State. On August 31, Dr. Marie A. Dye, Dean, College of Home Economics for twenty-six years, will retire. Dean Dye oversaw the development of the School from a single department. When Dean Dye came to Michigan State in 1929, all of home economics was in one department. She departmentalized the school and continued to serve simultaneously for several years as both head of the Foods and Nutrition Department and Dean. She holds B.S., M.S., and Ph.D. degrees from the University of Chicago, and served as President of the American Home Economics Association in 1948–50.

Dr. Thelma Porter of the University of Chicago has been appointed the new Dean, effective September 1. Dr. Porter holds a B.S. degree from Michigan State, an M.A. from the University of California, and a Ph.D. from the University of Chicago. She has twice been honored by her alma mater, Michigan State, in 1947 being granted an honorary degree of Doctor of Science and in 1950 receiving the Alumni Award for Distinguished Service. She was previously on the staff at Michigan State from 1939 to 1944 as Head, Department of Foods and Nutrition, leaving to become Professor and Head of Home Economics, University of Chicago.

FAO News. An announcement has been made of the resignation of Dr. P. V. Cardon as Director-General of the Food and Agriculture Organization of the United Nations, due to ill health. Since his resignation, Sir Herbert Broadley, Deputy Director-General, has been empowered to act in his stead.

Workshop in Work Simplification. Montana State University, Missoula, will offer a special workshop July 16 to August 1 on "Work Simplification in the Home and Institution." The course will deal with principles of scientific management and their application. Students will have an opportunity to use work simplification techniques by doing at least one time-and-motion study of their own choosing. Three credits will be given for this workshop.

Publications of Interest from the States. *Group Discussion-Decision* is the title of a new monograph by Betty Wells Bond, of the Minnesota Department of Health, Minneapolis. The booklet is concerned with details and results of a combined research and demonstration project conducted under the auspices of the Minnesota Department of Health in Duluth. The project was planned to test the effectiveness of the

Hospital Saves $11,028

One typical hospital saved $11,028 in 1955 by switching from single-strength orange and grapefruit juices to Bombay. Yet nutritional and taste standards were strengthened at the same time. Bombay California Valencia Orange and Grapefruit Bases made the big difference. Cost is only .0037¢ per ounce, reconstituted grapefruit and only .0039¢ per ounce, reconstituted orange.

Assays Reveal High Nutrition

Modern laboratory-control has come to the aid of modern budget-control. In-season and out-of-season, Bombay's nutritional standards are constant. Each 4-ounce serving of Bombay provides more than the minimum daily adult Vitamin-C requirement. January assay reveals 46 milligrams of Vitamin C in 4-Ounce serving of Bombay Orange—24 hours after reconstitution. 44 Milligrams of Vitamin-C remained in the 4-ounce serving of Grapefruit—24 hours after reconstitution. And leading state institutions, hospitals, colleges and industrial cafeterias report that Bombay's flavor is much appreciated, both for mealtimes and intermediate feeding.

Ease of Handling

Bombay Orange and Grapefruit give you these luscious fruits in their most delectable, most practical form. Canned base does not require refrigeration. Each can lined with citrus enamel liner—no contact with tin, no tinny taste. Packed 6 No. 10 cans to the case. Samples for testing gladly sent—without obligation of any kind. Write direct to the packer: The H. R. Nicholson Co., Kenshaw and Oakleaf Avenues, Baltimore 15, Md.

BOMBAY

California Valencia Orange and Grapefruit Bases

THE H. R. NICHOLSON CO.
Kenshaw & Oakleaf Aves.
Baltimore 15, Md.

group discussion-decision method in a health education program in chronic illness and to demonstrate a method whereby the public and the professions involved in a lay educational program could mutually combine to determine and implement specific objectives of the program. A review of related literature is also included in the report. A limited number of copies are available without charge upon request.

For those interested in food habits and food consumption, the new Bulletin 431 of the South Carolina Agricultural Experiment Station, "Use of Milk by Rural Families, South Carolina, 1953" will be of interest. A study of 504 rural families indicated that 98 per cent used milk in some form, but that many individuals consumed amounts much below 1 pt. per person per day as recommended. Considerable geographical difference in family consumption was noted, i.e., 12 qt. milk equivalent for Coastal nonfarm families compared with 30 qt. for Piedmont farm families. Other data on factors affecting milk consumption, forms of milk used, and homemakers' preferences affecting the use of milk, and expense for milk products, nutritive value provided by milk consumed are presented. Copies may be obtained by writing the Agricultural Experiment Station, Clemson Agricultural College, Clemson, South Carolina.

A third publication, "Better Corn Meal and Grits," published by the Texas Agricultural Experiment Station, College Station, as Misc. Publication 127 has been brought to the editors' attention. It is part of an educational campaign growing out of a program begun several years ago by the Texas Nutrition Council and the Texas Dietetic Association to encourage the enrichment of corn meal. Printed in large-size type, it is designed to serve the various agencies and individuals who are helping to spread the information about the value of enrichment of corn meal and grits. Topics covered are: source of information on corn meal and grits in Texas; natural food value of corn meal and grits; eating quality of corn meal and grit dishes; ways of preparing corn meal and grits; how enrichment is done; effect of baking powder and soda on corn bread; vitamins in corn meal and grits when ready to eat; effect of baking utensil on thiamine in corn bread; and direct and indirect food value of corn bread and grits. Eight recipes conclude the booklet. Copies may be obtained from Dr. Jessie Whitacre, Professor, Department of Rural Home Research of the Experiment Station.

Government Publications. Recently issued is "Training for Quantity Food Preparation"—Vocational Div. Bull. No. 261, Trade and Industrial Series No. 64—of the Office of Education, U. S. Department of Health Education and Welfare. This booklet is intended to serve educational planners as a source of information on the establishment in trade schools and comprehensive high schools of training programs in quantity food preparation. Such topics as developing the curriculum, determining plant facilities, length of the course, recruiting and selecting students, purchase and economical utilization of food, and promoting and conducting adult classes are covered. Copies may be ordered from the Government Printing Office for 20 cents each.

"Household Practices in the Use of Foods . . . Three Cities, 1953" by Corinne LeBovit and Faith Clark has been released as Agriculture Information Bulletin No. 146 by the Household Economics Research Branch, Agricultural Research Service, U.S.D.A. A survey in Birmingham, Indianapolis, and Everett, Washington, of 850 homemakers is reported in terms of family use of eggs, milk, table fats, sugar, and selected vegetables, as well as home baking and frying. Perhaps the most significant finding about milk was that although all families used some, persons in all age groups drank less than recommended amounts. Potatoes were used more in Indianapolis and Everett than in Birmingham, but in all three cities, they were served mashed more frequently than any other way. Cabbage is served raw more often than cooked. Birmingham and Indianapolis families preferred carrots raw while in Everett they were served cooked twice as often as raw. Use of foods differed less among income groups than from city to city. High-income families, however, used less potatoes and baked them more often. They used more fresh whole milk and also more fresh skim milk. Copies of this report are available from the Government Printing Office for 50 cents each.

A second U.S.D.A. publication, Technical Bulletin No. 1142, is titled "French-Frying Quality of Potatoes . . . as Influenced by Cooking Methods, Storage Conditions, and Specific Gravity of Tubers" by Mary E. Kirkpatrick, Peter H. Heinze, Charles C. Craft, Beatrice M. Mountjoy, and Claire E. Falatko. A study of suitability of potatoes for French-frying, reported here, considered methods of preparation, specific gravity of potatoes, storage, desugaring conditions of raw tubers, and holding conditions and freezer storage of partially French-fried potatoes. Results indicated that tubers of high specific gravity is desirable in potatoes to be French fried. Three to five months' storage at 40°F. resulted in sugar accumulation in raw potatoes causing excessively brown color and a burned flavor in French-fried spuds. Storage of two months at 55°F. resulted in much better color and flavor. Holding of par-fried potatoes for as long as 24 hr. before final frying had relatively little effect on palatability of Chippewa and Kennebec varieties, but resulted in less tenderness and flavor in Russet Burbank potatoes. No significant differences were found as a result of thawing or not thawing frozen par-fried potatoes before cooking by the oven, oven-broiler, or broiler methods. French-fries from par-fried made at time of harvest and held two to nine months in freezer storage were comparable in palatability to freshly prepared French fries. Copies of this report may also be purchased from the Government Printing Office; price is 20 cents a copy.

Sweeten it with SUCARYL®...

you save all sugar's calories

nd you can't taste the difference!

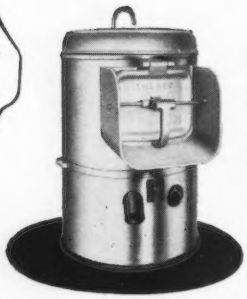
Lemonade sweetened with SUCARYL has only *8* calories per glass! If it were sweetened with sugar, each glass would contain 56 calories. Can you think of a pleasanter, easier way to save excess calories than by sweetening summertime foods and beverages with calorie-free SUCARYL?

The SUCARYL recipe booklet contains dozens of calorie-saving recipes to bring delicious variety to either diabetic or reducing diets.

Get your free copy at your nearest pharmacy.

ABBOTT LABORATORIES • NORTH CHICAGO, ILLINOIS

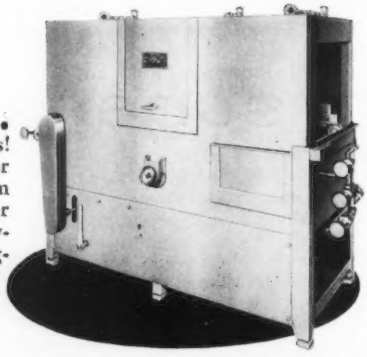
607184



PEELERS . . . New Toledo Portable Bench Peeler. "Double action"—has abrasive on both cylinder and disc. Adjustable timer. Capacity 15 lb. Other sizes provide full choice to 70 lb. capacity.

it pays to put a TOLEDO at every cost control spot

DISHWASHERS . . . 29 models to meet all needs! Counter, door-type and conveyor pre-wash types. Capacities from 450 dishes per hour (counter dishwasher) . . . up to heavy-duty three-tank machines averaging 12,600 dishes hourly.



FOOD MACHINES...

NEW TOLEDO SAW Hi-Speed Model 5300 has extra large working area. Big capacity, 16" wheels.

NEW TOLEDO CHOPPERS . . . 1/3 to 7-1/2 HP . . . and up to 25 HP. Speedy, efficient, rugged.

NEW TOLEDO STEAK MACHINE Hi-Speed Model 5251 produces those tempting, tender steaks at a 40% faster rate.

SLICERS . . . illuminated platter, exclusive "Quick Weigh" Estimator.

Eliminate Food Wastes the Modern Way

TOLEDO DISPOSERS

Big heavy-duty sizes for food preparation areas. 3 HP and 5 HP models. Or in compact 1/2 HP sizes for dish scraping. Fast, sanitary; shred all food wastes and flush down drain before they become garbage.

SERVICE Factory-Trained 200 Cities

Toledos are an investment in top-quality, top performance—pay daily dividends in faster, more efficient handling of food, dishes and food wastes. They provide an unfailing recipe to hold down your kitchen operating costs.

Today, it pays more than ever to turn to TOLEDO for all your kitchen machine needs. Write for condensed catalog No. SD-3815.

TOLEDO® SCALE COMPANY

Kitchen Machine Division • 245 Hollenbeck St., Rochester, N. Y.

"Boneless Beef: Raw, Cooked, and Served . . . Results of Analyses for Moisture, Protein, Fat, and Ash" by Edward W. Toepfer, Claud S. Pritchett, and Elizabeth M. Hewston is Technical Bulletin No. 1137 of the Human Nutrition Research Branch, Agricultural Research Service, U.S.D.A. This study was conducted to obtain data for use in feeding programs of the Armed Services. On a carcass basis, food energy retention in cooked cuts was found to be 85 per cent; protein, 94 per cent; and fat, 82 per cent. Moderate trimming of fat decreased fat in plate waste without apparent reduction in fat presumed eaten. Plate waste was found to increase with the amount of raw beef issued to a mess, and fat in plate waste increased with fat in the served cooked beef. It was calculated that 67 per cent of the food energy of the issued beef, 84 per cent of the protein, and 51 per cent of the fat were eaten, thus making plate waste amount to 10, 6, and 11 per cent respectively.

Graduate Opportunities in Home Economics. A list of graduate opportunities in home economics for 1956-57 and 1957-58 has been compiled and published in the Spring 1956 issue of *Omicron Nu* Magazine. Reprints of this compilation are available on request either from the American Home Economics Association, 1600—20th St., N. W., Washington 9, D. C., or the Omicron Nu Office, Home Economics Building, Michigan State University, East Lansing.

Gerber Fellowship. Winner of the Gerber Baby Foods Post-Doctorate Fellowship Award for 1956 is Dr. James Cameron MacDonald, McMaster University, Hamilton, Ontario, Canada. Dr. MacDonald will work on "Studies into the Action of the Vitamin Biotin" at McMaster University. The Award carries with it an honorarium of $6000. Selection of the Fellow is made by The Institute of Food Technologists.

Interns Graduate. In June, five dietetic interns completed their year's work at the *Aetna Life Insurance Company*, Hartford, Connecticut. The graduates are:

Helen Anderson, University of Vermont
Janet Gebauer, Simmons College
Eileen Hileman, Pennsylvania State University
Nancy Knickerbocker, Cornell University
Mary Ann Planeta, College of St. Elizabeth

Army Personnel Announcements. The following changes in dietetic personnel of the Army Medical Specialist Corps have been announced:

PROMOTIONS

1st Lieutenant to Captain

Mary L. Blundell
Phyllis L. Smith

2nd Lieutenant to 1st Lieutenant

Mildred G. Bean
Monica A. Bonemeyer
Ellen M. Cox
Ruth K. Elliottt
Joyce Giblin

INSIDE SCIENCE

The Vital Story of Vitamin B_1

(Thiamine)

by Science Writer

History. The discovery of vitamin B_1 resulted from research into the cause of beriberi. Almost 50 years passed between Eijkman's discovery of the relationship of the disease to diet and the famous work of Jansen and Donath who first isolated the crystalline vitamin from rice bran.

Within ten years of that first isolation the vitamin's chemical structure was determined and it was successfully synthesized.

Eijkman's work resulted in the development of a theory that beriberi was caused by a lack of some factor in the diet and not by a toxin or infectious agent. This idea was not readily accepted until the growth of dietary knowledge proved it correct.

Isolation and Synthesis. In 1926 Profs. Jansen and Donath accomplished the isolation of crystalline vitamin B_1 from rice bran. In 1931 Windaus and co-workers successfully isolated pure vitamin B_1 and established its empirical formula. In 1936 R. R. Williams, and independently R. Grewe, explained the vitamin's chemical structure. That year, R. R. Williams and J. K. Cline accomplished the synthesis of thiamine which is in wide use today. Andersag and Westphal also synthesized the vitamin in 1936. Another synthesis was described by Bergel and Todd in 1937.

Photomicrograph of B_1 crystals

Chemical and Physical Properties. Thiamine hydrochloride is white, water soluble, with a nut-like, salty taste and yeast-like odor. Its empirical formula is: $C_{12}H_{17}ClN_4OS \cdot HCl$. Thiamine produced by synthesis is identical chemically and in biological activity with that obtained in pure form from nature.

Deficiencies. A deficiency of thiamine is characterized by these symptoms: depression, irritability, fearfulness, lack of initiative and interest, loss of appetite. Symptoms vary since in usual practice deficiencies of other water-soluble vitamins occur. Medical treatment is simple: a sufficient amount of thiamine is administered to relieve symptoms quickly and the physician provides for a continuing adequate intake.

Beriberi victim

A severe deficiency of thiamine leads to beriberi, a serious and sometimes fatal disease. While beriberi is almost a medical curiosity in the United States, it is common in countries in which polished white rice is a staple of the diet.

Human Nutrition Requirements. Thiamine is one of the nutritive elements the human body needs daily and does not store in quantity. The minimum daily requirements established by the U. S. Food and Drug Administration for the prevention of symptoms of thiamine deficiency disease are:

Adults	1.00 mg.	Children (1-5 incl.)	0.50 mg.
Infants	0.25 mg.	Children (6-11 incl.)	0.75 mg.

The Food and Nutrition Board of the National Research Council recommends the following dietary intake of thiamine for healthy persons in the U. S. A.

Recommended Daily Intake in Milligrams

Age	*Men*	*Women*
25	1.6	1.2
45	1.5	1.1
65	1.3	1.0
Pregnant (3rd trimester)		1.5
Lactating		1.5

The Council recommendations for infants and children vary below and above these figures, based on age and sex. Various illnesses and stress situations can exhaust vital reserves of thiamine. So, for the physician, vitamin B_1 is prepared in various dosage forms and potencies for therapeutic and prophylatic use.

How do human beings receive thiamine? It is widely distributed in foods of animal and vegetable origin, particularly cereal grains and dry legumes. Because of public demand for refined products which millers must meet for obvious economic reasons, a loss of thiamine and other factors occurs during processing. The thiamine loss is overcome through the use of *enrichment* in cereal grain products for which Federal Standards exist, or in other foods such as breakfast cereals, by *fortification* or *restoration*. When enriching, fortifying or restoring, the food processor adds the necessary amount of pure thiamine (and other vitamins and minerals) to the food so that the finished product meets Federal, state and territorial requirements or contributes to the consumer an amount of the vitamin which dietary experts believe significantly useful.

Thiamine is extensively used for the enrichment of cereal grain foods such as white flour, white bread and rolls, macaroni products, farina, corn grits and meal, milled white rice. The story of these uses is delightfully told in a separate brochure which is available on request for reference or educational purposes.

Production. Huge production facilities at the Hoffmann-La Roche plant in Nutley, New Jersey, deliver highest quality thiamine *by the tons*. Roche manufactures thiamine hydrochloride and thiamine mononitrate. These fine products, which equal or exceed U.S.P. specifications, are ideal for use by pharmaceutical makers and food processors. Years of experience in research and manufacture have made Roche the leader in vitamins.

This article is published in the interests of pharmaceutical manufacturers, and of food processors who make their good foods better with essential, health-giving vitamin B_1. Reprints of this and others in the series are available on request. Write the Vitamin Division, Hoffmann-La Roche Inc., Nutley 10, New Jersey. In Canada: Hoffmann-La Roche Ltd., 286 St. Paul Street, West; Montreal, Quebec.

Joan D. Gibson
Joyce H. Gibson
Carmen I. Greenway
Carlese M. Hamlin
Jean D. Jefferson
Helen J. Jennings
Bonnie B. Lee
Virginia A. Maier
Elinor G. Marshall
Lorraine Mondrick
Helen L. Morkovsky
Janet K. Parent
Virginia A. Paulsen
Dorothy J. Poling
Ruth M. Robinson
Donna L. Smith
Margaret L. Smith
Ann P. Tinsley
Elaine R. Upton

SEPARATIONS

Reserve Officers Relieved from Active Duty

Capt. Charlotte H. Henry
Capt. Phyllis L. Smith
Capt. Alma W. Thom
1st Lt. Dolored L. Cooley
1st Lt. Carmen I. Greenway
1st Lt. Mary P. Lowery
2nd Lt. Constance W. Walton

News of State Associations

Arizona Dietetic Association. The *Central Arizona Dietetic Association* (Phoenix) met at Arizona State College in Tempe in April for a tour of the new dining hall of the Student Union Building. Following dinner, Dr. Jessie Rannels spoke about her year spent in France as a Fulbright Scholar . . . Nine members of the Association have participated in a special Maricopa County Career Guidance Recruitment Program for 1955–56, and the Association is represented on the "Allied Medical Careers Panel" of the Women's Auxiliary of the County Medical Society.

In Tucson, the *Southern Arizona Dietetic Association* met in April to hear Dr. Dorothy Marquart, Associate Professor of Psychology, University of Arizona, speak on "The Psychology of Feeding Children in the Home and Hospital."

Arkansas Dietetic Association. On May 25 and 26, the Arkansas Dietetic Association met in Little Rock. The program included:

"Air Corps In-Flight Feeding"—Col. Donald Kennett, Little Rock Air Force Base
"Dietary Aspects of Heart and Kidney Disease"—Benjamin I. Heller, M.D., University of Arkansas Medical School, and Director, Research Laboratory, VA Hospital, Little Rock
"Better Public Relations"—Abrey D. Gates, Council on Rural Health, American Medical Association
"Medical Use of Radioisotopes"—William H. Perkins, M.D., Director, Radioisotope Research Laboratory, University of Arkansas Medical School
"Dietitians, Come out of the Kitchen"—Marjorie Morrison, Florida State Board of Health

During 1955–56, the Arkansas Association has emphasized career guidance activities and had made use of radio, TV, talks to high school students, and other techniques to reach the public.

California Dietetic Association. Los Angeles was the scene of the spring convention of the California Dietetic Association, May 17 and 18. The program included:

"Improving Our Skills in Human Relations"—Robert Haas, Ph.D., University of California, Los Angeles
"Implementing Organizational Leadership"—J. A. Waites, Ph.D., VA Center, Los Angeles
"The Role of the Medical Team in Teaching Nutrition"—a panel discussion with a dietitian, psychologist, patient, and medical internist
"Meeting Our Public Through . . .
"Television and Radio"—Mercedes Bates, Advertising Food Consultant
"Writing–Professional and Lay Articles"—Helen Evans Brown, Food Writer Consultant
"Keeping up with the Advances in Nutrition"—William R. Bergren, Ph.D., University of California

Four scholarships have been awarded by the California Association for the year 1956–57. They will go to: Sherilyn Stewart, University of Utah, who will intern at Stanford University Hospital; Barbara Adams, San Jose State College, who plans an internship at the State University of Iowa; Esperanza Floro,

FAST FOOD SERVICE REQUIRES

fast toast production

Fast food service is essential to serve on-time breakfast trays — with plenty of crisp delicious hot toast—and a stainless steel Savory gas or electric toaster is essential to fast food service because a single unit easily produces up to *12 slices per minute* at lowest operating cost.

A Savory Toaster automatically unloads fresh hot toast, ready for serving, by means of its continuous conveyor system—and a toasting basket is *always* ready for loading. This reduces work-load and eliminates delay at the toasting station—and the perfect degree of crispness, color and texture of every slice is guarded by automatic time and temperature controls.

Ask your dealer or write for details to:

- Models producing 6 to 12 slices per minute!
- Requires less than 2 square feet of space.
- Gas models cost as little as ¾¢ an hour to operate; electric models require low connected loads.
- Easy to install, operate, keep clean and spotless.

Savory EQUIPMENT, INCORPORATED
120 PACIFIC ST., NEWARK, N. J.

created by the world's
most celebrated designers!

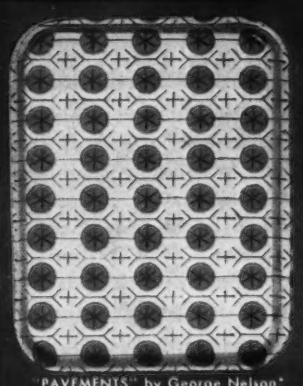
Bolta TEMPO-TRAYS

the first fashion-decorated trays

Feast your eyes! Patterns to brighten and blend with surroundings . . . glowing colors to entice the appetite. It's Bolta's distinctive new TEMPO-TRAYS, proud product of America's leading manufacturer of Food Service Equipment.

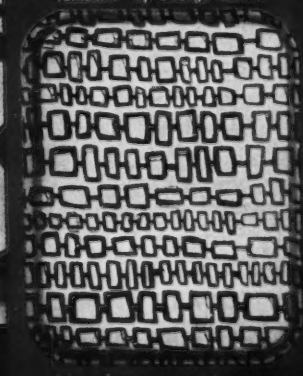
Fashioned exclusively by world's leading designers, TEMPO-TRAYS combine the same outstandingly durable qualities found in other famous Bolta trays.

"CHINA SHOP" by George Nelson*



"PAVEMENTS" by George Nelson*

"TERRAIN" by George Nelson*



"CHAIN" by Paul McCobb*

GENERAL PLASTICS

THE GENERAL TIRE & RUBBER COMPANY
BOLTA PRODUCTS DIVISION
LAWRENCE, MASSACHUSETTS

*Designed for the STIMULUS collection of Schiffer Prints.

Specify Boltaflex for booths and furniture, Bolta Wall for interiors

University of California, who will intern at St. Luke's Hospital, New York City; and Carolyn Geisler, University of California, who will be an intern at the University of California Hospital.

Six members of the *Sacramento Region* participated in a Career Day program at Sacramento State College, sponsored by the North Central Section of the California Home Economics Association. In a panel discussion, Jane Pirkey spoke on "Dietetics as a Career," after which members talked to various student groups and distributed copies of career guidance pamphlets.

District of Columbia Dietetic Association. The program for the April meeting of the District of Columbia Dietetic Association was: "Visual Aids Talk for You" by Capt. John A. Ey, Jr., Personnel Division, Army Surgeon General's Office. In May, sixty-five members attended the annual dinner meeting. Dr. H. M. Hildreth, Chief, Clinical Psychology, Division, Veterans Administration, spoke on "How We Get Cooperation."

Florida Dietetic Association. *Jacksonville* dietitians in March heard Dr. Matthew E. Morrow speak on "Nutrition and Internal Medicine." The group this year has cooperated with the Diabetes Association of Duval County by providing food demonstrations and discussions to fit the diabetes program.

The *Miami Dietetic Association* has an active program of cooperation with other local groups. Again this year, in cooperation with the Miami Heart Association, Miami dietitians have presented a series of four classes on low-sodium diets. The Heart Association has requested that these classes be given at least three times a year, so that this project is developing into a continued program . . . Another area of public relations work has been with the Miami Public Library in the preparation of a bulletin board display on careers in dietetics and in providing the library with material on dietetics for its vocational guidance file . . . During Dental Health Week, also, the Miami Dietetic Association sponsored a poster on "Help Your Child to Good Dental Health through Proper Nutrition," which was displayed in the window of a large department store in Miami Beach.

In St. Petersburg, members of the *Pinellas County Dietetic Association* have assisted the St. Petersburg Heart Association with a series of discussions on low-sodium diets . . . At the annual county fair, February 28 to March 3, a booth on weight reduction sponsored by the Pinellas County Health Department, was manned by dietitians.

Tampa dietitians took as their spring project the promotion of the field of dietetics. To this end, members took part in a P.T.A. program on child health and assisted the Hillsborough County Nutrition Committee with its Annual Weight Control Program.

Georgia Dietetic Association. On May 11, the Georgia Dietetic Association met in Augusta. The program featured:

"The Hospital Administrator Takes a Look at the Dietitian"—Whitelaw Hunt, Administrator, The University Hospital, Augusta

"The Fat and the Lean"—Dr. Robert G. Greenblatt, Augusta

"Personnel Responsibilities of the Dietitian"—LeVelle Wood, Division of Institutional Management, The Ohio State University, Columbus

"Changes in A.D.A. Membership Requirements"—Maniza Moore, A.D.A. representative

Illinois Dietetic Association. Illinois has two new local dietetic associations.

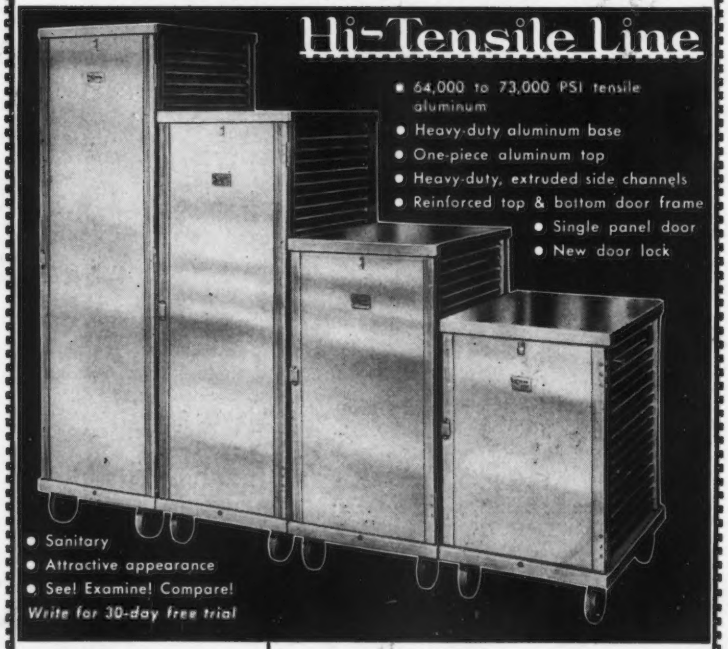
In January, a group in *Peoria* met at Methodist Hospital at the invitation of Alberta Hughes. This organizational meeting has been followed by monthly meetings. In February, the group had as its guest, Dr. James Sours, Methodist Hospital, Peoria, who spoke on "The Dietary Aspects of Kidney Disease," and in April, members heard Dr. Ellis Canterbury, Peoria, discuss "Allergies, with Special Emphasis on Food Allergies and Their Treatment." Officers for the coming year for the *Peoria Dietetic Association* will be: President, Alice Peck; President-Elect, JoAnn Kiest; and Secretary-Treasurer, Margaret Clem.

In the Rockford area, the *Rock River Valley Dietetic Association* has been formed, with the following officers: President, Mame Dentler; Vice-President, Norma Jean Voss, Swedish Ameri-

Announcing the NEW 1956 CRES-COR CABINETS

. . . for efficient, quantity handling of portioned or bulk food, baked goods, china, and a host of other items under strictest sanitary conditions. Whether for inter-department or outside delivery, these new HI-TENSILE utility cabinets will withstand the hardest usage and remain bright and attractive — virtually a display piece in itself. Famous CRES-COR corrugated sides permit tray or pan spacing variation which adds to the versatility of these cabinets. Insulated models available. Also models with heating or cooling units.

Eliminate that costly handling overhead now with the long-life . . .


Hi-Tensile Line
• 64,000 to 73,000 PSI tensile aluminum
• Heavy-duty aluminum base
• One-piece aluminum top
• Heavy-duty, extruded side channels
• Reinforced top & bottom door frame
• Single panel door
• New door lock
• Sanitary
• Attractive appearance
• See! Examine! Compare!
Write for 30-day free trial

TOMORROW'S DESIGN TODAY in food handling equipment

FILL IN COUPON NOW! A-12

name_____

firm_____

address_____

CRES-COR® RACKS • CABINETS • HAND LIFTS DOLLIES • TRUCKS • TRAY CARTS FOOD CONVEYORS • ADD-A-RACKS ®Trade Mark

ALUMINUM MAGNESIUM STAINLESS

CRESCENT metal products, inc.

18901 ST. CLAIR AVENUE CLEVELAND 10, OHIO

Originators of corrugated-wall, multiple-pan, aluminum food handling equipment

Only Meat . . . is Meat

Suppose we suddenly found ourselves in a "Brave New World," in which all the rich protein, the B vitamins (including the important B_{12}), the minerals, and all the other nutrients of a juicy steak or a succulent pork chop could be compressed into a capsule. Suppose we were to take one or two such capsules each day. What would happen?

Would we be just as healthy? Would we be as happy?

There is something about man's wish for meat that cannot be satisfied by chemical or mathematical analyses. The feeling of satisfaction, the downright enjoyment of biting into and chewing, the pleasurable effect of having eaten well . . . all these make meat more than just an impressive list of essential nutrients. Long before man knew anything about the science of nutrition he knew meat was part and parcel of his health and his joy of eating and of living.

Other foods may be fortified and enriched, *but none can ever take the place of meat.*

Only meat is meat.

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

American Meat Institute

Main Office, Chicago . . . Members Throughout the United States

can Hospital, Rockford; Secretary, Mary Wilson, Rockford College; and Treasurer, Marilyn Carson, St. Anthony's Hospital, Rockford.

Louisiana Dietetic Association. On May 19, the *Baton Rouge Dietetic Association* participated in a civil defense training program, preparing a 23-lb. round roast with improvised equipment. The roast, which would serve nearly 150 people, was cooked in a huge lard can surrounded at the base by burning charcoal. The roast was held during cooking by coat hanger wires run through the meat and over a metal rod inserted in holes in the sides of the can. Corn and Irish potatoes were also prepared—roasted in foil on chicken coop wire over a charcoal fire. Members of the Baton Rouge and Louisiana Dietetic Associations have been conferring with state Civil Defense officials about initiating classes on emergency mass feeding.

New Hampshire Dietetic Association. On May 18, the New Hampshire Dietetic Association met at the University of New Hampshire, Durham. Announcement was made of the establishment of the Helen Evangeline Gilson scholarship fund to be administered by the New Hampshire Association. A check for $540 was presented to the Association by Silvia Bixler in behalf of "The Pennsylvania Hospital Dietitians Society," which is composed of 137 dietitians whom Miss Gilson helped to educate as dietetic interns at the Pennsylvania Hospital. At Miss Gilson's request, the scholarship will "be limited to a student majoring in food, nutrition, and institutional administration in home economics at the University of New Hampshire. She should also be a native of New Hampshire or the daughter of the former members of the Pennsylvania Hospital Dietitians Society." Miss Gilson was first president of the New Hampshire Dietetic Association.

Following the business meeting and luncheon, members motored to Springvale, Maine, for a tri-state dietetic meeting with attendants from Maine, Vermont, and New Hampshire. Prof. Harry Keemer, Department of Dairy Science, University of New Hampshire, spoke on "Nutrition Research with Animals."

New Mexico Dietetic Association. On May 24, the New Mexico Hospital Association and the New Mexico Dietetic Association jointly sponsored a workshop for food service employees in hospitals which have no dietitian or trained food supervisor. The morning session was devoted to administrative practices while in the afternoon, the topic of discussion was modified diets and how to achieve interest and variety in meals.

The New Mexico Dietetic Association's spring meeting was held at Los Alamos. Speakers at the meeting included Cora E. Kusner of Colorado State Hospital, Pueblo, and Dr. Wright H. Langham, whose topic was "Nutritional Aspects of Use of the Human Counter." A March meeting in Albuquerque featured James Jenkins, Administrator, Bernalillo County Indian Hospital, who spoke on "What Administrators Expect of Dietitians Today."

Another activity of the New Mexico group has been participation in the program at the University of New Mexico campus of Career Day held April 13 in Albuquerque. Seniors interested in home economics from the eight high schools in the Albuquerque area were invited to attend. The program included a panel discussion on various phases of home economics, with dietetics represented by Kris Konugros and Grace McGuinness. This was followed by displays of home nursing, food preparation, nutrition, sewing and tailoring, and so on.

Oregon Dietetic Association. On April 28, the Oregon Dietetic Association met in Eugene. The program included four speeches, as follows:

"Cost Control and Related Problems"—H. P. Barnhard, Food Director, University of Oregon

"The Relationship of Nutrition to the Development of the Natives of the Pacific Islands"—Dr. H. G. Barnett, Professor of Anthropology, University of Oregon

"Program for the Development of Children as Carried on at the Children's Hospital School"—Dr. William Roecker, Director, Children's Hospital School

"Civil Law and the Dietitian"—Dr. F. R. Lacy, Attorney, Eugene

"Hurry Doc...I want to get back to the solarium for a cup of that good Continental Coffee!

Everyone Enjoys

More Coffee Flavor

In every walk of life everyone enjoys rich, full-bodied, invigorating CONTINENTAL COFFEE. Superb blending of the world's choicest coffees and precise roasting with automatic controls assure unfailing uniformity. Write today for a FREE trial package.

Continental Coffee

AMERICA'S LEADING COFFEE for Restaurants, Hotels and Institutions

CHICAGO • BROOKLYN • TOLEDO

In the Pacific Northwest it's

ROYAL CORONA COFFEE

Seattle, Washington

Enriched Bread... and Child Health in America

The enrichment of commercial white bread with thiamine, riboflavin, niacin, and iron is one of the important factors in the improvement of nutrition in America's school children.[1] Improved nutrition appears to have made a valuable contribution to the improvement of child health during recent years.[2]

Containing nonfat milk solids (usually 4 lbs. per 100 lbs. of flour) as well as officially defined amounts of B vitamins and iron, enriched bread provides high percentages of recommended daily dietary allowances for children.

The protein of enriched bread, an aggregate of flour, milk, and yeast proteins, is high in nutritive quality, effective for growth as well as tissue maintenance. On the basis of its percentage of calories provided, enriched bread supplies substantially more than its share of niacin, thiamine, and iron, and a goodly proportion of riboflavin and calcium. Because enriched bread presents carbohydrate and good quality protein simultaneously, the carbohydrate thereby "sparing" protein, it helps promote optimum protein anabolism.[3] For all these reasons, enriched bread constitutes a valuable asset to good nutritional health in children.

1. Bowes, A. deP.: Dietotherapy—Nutrition of Children During Their School Years, Am. J. Clin. Nutrition 3: 254 (May-June) 1955.
2. Kelly, H. T.: Impact of Modern Nutrition on Twentieth Century Morbidity, Pennsylvania M. J. 58: 481 (May) 1955.
3. Cantarow, A., and Trumper, M.: Clinical Biochemistry, ed. 5, Philadelphia, W. B. Saunders Company, 1955, pp. 139, 140.

Percentages of Recommended Daily Dietary Allowances* for Children Provided by Enriched Bread—6 and 8 slices

	Children Ages 4 to 6 years		Children Ages 7 to 9 years	
	6 slices	8 slices	6 slices	8 slices
Protein	23%	31%	20%	26%
Niacin	38	50	30	40
Riboflavin	18	23	14	19
Thiamine	41	55	33	44
Calcium	12	16	12	16
Iron	41	55	33	44
Calories	24	32	19	25

*National Research Council's recommended daily dietary allowances (1953):
Children, 4 to 6 years of age; weight, 40 lbs.; height, 43 inches.
Children, 7 to 9 years of age; weight, 59 lbs.; height, 51 inches.

AMERICAN BAKERS ASSOCIATION
20 NORTH WACKER DRIVE • CHICAGO 6, ILLINOIS

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

Tennessee Dietetic Association. Gatlinburg, in the Great Smokie Mountains, was the pleasant scene of the annual meeting of the Tennessee Dietetic Association on May 10 and 11. A stimulating program presented:

"Selling Health in an Industrial Setting"—Dr. Thomas A. Lincoln, Medical Director, Health Division, Oak Ridge National Laboratories, Oak Ridge, Tennessee

"Food Service in the Therapeutic Program in a Psychiatric Hospital"—Dr. B. F. Peterson, Superintendent, Eastern State Hospital, Knoxville

"Philosophy and Food"—Verna McCallum, Director of Home Economics, Stokely-Van Camp, Inc., Indianapolis

"Radiation Sterilization of Foods—The Outlook for Tomorrow"—Dr. R. H. Wasserman, Senior Scientist, Oak Ridge Institute of Nuclear Studies, Oak Ridge

"Look Carefully Behind Conclusions"—Dr. Helen A. Hunscher, Chairman, Department of Home Economics, Western Reserve University, Cleveland

Association Activities

39th Annual Meeting. Chairmen and co-chairmen of the Local Arrangements Committee for the 39th Annual Meeting of A.D.A. met May 16 in Milwaukee with Winifred H. Erickson, A.D.A. President, and representative members of the Headquarters staff to discuss plans and activities for the meeting.

A hotel reservation form may be found in the June issue, which also gives information concerning alumnae meals for college and dietetic internship groups in the section on "Annual Meeting Glimmers."

This year's exhibition in connection with our 39th Annual Meeting will total 270 booths. Since April 16, 94 per cent of the space has been allocated to exhibitors.

Executive Board Meetings. The A.D.A. Executive Board and Finance Committee met in Chicago on June 28, 29, 30, and July 2. Details will be reported in the *Courier*.

Leaflets for International Distribution. A leaflet tracing the story of the dietitian in the U. S. has been developed for distribution at the 2nd International Congress of Dietetics. It covers the professional growth of the dietitian from the 1890's to the present. It is the first publication of its kind issued by the Association. This attractive, illustrated leaflet may be obtained from the Headquarters office on request.

A second, illustrated leaflet outlining basic information concerning the Association itself is also being sent abroad. Considerably shorter than the story of the dietitian, this leaflet, too, is available at the office.

A.D.A. Representatives. Maxine Armstrong, University of Michigan School of Nursing, represented the Association at the annual *Conference on Aging*, July 9 to 11, in Ann Arbor.

The 20th Annual Educational Conference of the *National Association of Sanitarians* will be held July 23 to 26 in Chicago. Louise Wilkonson, Michael Reese Hospital, Chicago, will be our official representative.

At the *A.M.A. symposium* on "The Relation of Proteins and Amino Acids to Nutritional Health" in Los Angeles, May 21, Gertrude Miller, VA Center, Los Angeles, attended as A.D.A. representative.

Clarice Gullickson, Dietetic Division, VA Central Office, Washington, D. C., served as our official delegate at the historic meeting commemorating the *50th anniversary of our federal pure food and drug laws* in Washington, June 27.

A.D.A. Exhibits. The Association presented the career exhibit "Be a Dietitian" at the American Home Economics Exposition in Washington, D. C., June 26 to 29. Ruth Cornman of St. Elizabeth's Hospital was the booth chairman. Members from the D. C. Dietetic Association assisted in manning the booth. Career leaflets were distributed to the exposition visitors, with special emphasis given to the folder, "Dietitians in Demand."

Obituary

Wilma Phillips Stewart. The A.D.A. office has been notified of the

★

DISHWASHING DEPT. · CHRIST HOSPITAL · CINCINNATI

food service might cost you much less

• The present equipment for the preparation and serving of food in your establishment may be in perfect condition. But, are you certain that it is as efficient as it might be if it were partially replaced and properly rearranged?

• The investment for such changes might be saved in one year and become profits thereafter. In one recent case, new Van equipment and rearrangement *cut dishwashing personnel from 19 to 12 and will eventually reduce it to nine!*

• Use *Van's century of experience* to cut your costs now.

The John Van Range Co.

EQUIPMENT FOR THE PREPARATION AND SERVING OF FOOD

Branches in Principal Cities

341 EGGLESTON AVENUE **CINCINNATI 2, OHIO**

23 WAYS TO CUT FOOD WASTE AND LABOR COSTS WITH *dripcut*®

SAUCES
Catsup, BBQ sauces, Mustards, Chili sauce, etc.

BEVERAGES
Cream, Juices, Lemonade, Ice water, etc.

Write for free brochure showing many new ways to PORTION CONTROL and cut costs with Dripcut. Progressive dealers display a complete line of Dripcut products.

dispensers, inc.
947 E. 62nd Street, Los Angeles, Calif.

BOOST ICE TEA SALES

use this beautiful
LOW COST HIGH PROFIT
tea dispenser
(models E & H)

Modern, gleaming stainless steel and plexiglas. Easy to clean, nothing to get out of order. Write for Free Catalog.

dispensers, inc.
947 E. 62nd St
Los Angeles, Calif.

HILL

OLSON MECHANIZED DISH HANDLING EQUIPMENT

doesn't cost you one cent!

it pays dividends in...

LOWER LABOR COSTS

Handle more dishes with fewer people . . . reduce food service labor costs

FASTER, SAFER HANDLING

Dish turnover is faster . . serve more people with less equipment. Breakage is minimized.

EFFICIENT USE OF SPACE

Olson Conveyors permit production-line efficiency in dishwashing rooms . . require less space to handle more dishes.

Olson mechanized dish handling systems have paid for themselves many times over in the savings they have made in time, labor, equipment and space. Olson installations in hospitals, restaurants, hotels and food service establishments of every type are the best advertisement we can write for Olson equipment. See for yourself what modern mechanized dish handling has done for others. Write for the location of the nearest Olson installation to you.

Ask for catalogs on Olson mechanized dish handling equipment. Sent without obligation.

OLSON CONVEYORS
SERVING AMERICAN INDUSTRY SINCE 1900

Samuel Olson Mfg. Co., Inc.
2424 Bloomingdale Ave
Chicago 47, Illinois
Offices in Principal Cities

death of Wilma Phillips Stewart, formerly Food Editor of the Des Moines *Register Tribune*. Mrs. Stewart had been a member of the Association since 1945.

News of Products and Services

On June 28, the *Kellogg Company* celebrated its 50th anniversary with a Cereal Festival in Battle Creek, Michigan, attended by thousands. To serve the visitors, in shifts of approximately 2400 each, 222 tables were set up along Michigan Avenue in the heart of Battle Creek's business district and extending almost a half a mile. Kellogg's cereals and milk were served. During the hours of the festival, the clothes, music, songs, and antics of 1906 vintage were featured, with many from the community attending in costumes of that era. Elaborate historical displays in store windows and antique automobiles also marked the event.

The *Procter & Gamble Company* demonstrated at the National Restaurant Show in May several newly developed recipes for the use of the Company's Selex and Pertex—new shortenings produced by a patented process of directed interesterification. This process changes the molecular structure of meat fats so that shortenings with the same fine qualities as premium vegetable shortenings are produced. Pertex is recommended for fried foods, pie crusts, cookies, and all general baking. Selex is designed for cakes, icings and sweet yeast goods. The new recipes, which are available on request to the Restaurant Research Department, include new fillings for French-fried sandwiches (ham and egg, bacon and egg, shrimp and egg, and fish and egg), as well as barbecue French toasted sandwiches, cling peach cobbler, southern fried pies, yeast raised doughnuts, quick coffee cake with praline topping, "Down East" hand-cut doughnuts, and Pertex cornbread and cornsticks.

Hoffmann-LaRoche Inc. has recently issued a new booklet on enrichment, "The Vital Story of Cereal Grain Products." This brochure is actually a collection of reprints of the Roche "Inside Science" series of advertisements. Information on established U. S. standards for enrichment of white flour and bread; macaroni, spaghetti, pastina, noodles; corn meal and corn grits; and cereals is presented along with discussion. One section also covers enriched milled white rice and the story of rice enrichment in the Philippines.

"Junket" Brand Foods has reported that "milk custards" made with rennet powder are low in sodium. Analysis done in the laboratories of Foster D. Snell, Inc., showed that sodium content per serving (based on four ½-c. servings per package, made with whole milk as directed on the package) of orange, lemon, maple, strawberry, vanilla, and raspberry rennet-custards ranged from 61.0 to 60.85 mg. sodium. For chocolate rennet-custard, analysis indicated a sodium content of 70.3 mg. per serving. Comparable data for other desserts prepared from mixes are: butterscotch pudding, 250 to 490 mg. per serving; vanilla pudding, 119 to 385 mg.; tapioca combination puddings, 118 to 190 mg.; gelatin desserts, 68 to 110 mg. and up, depending on sodium content of the water used.

Champion Dish Washing Machine Company has put on the market a roll hood, counter-type dishwashing machine with a capacity of 640 dishes an hour. This new machine may be installed under the counter, mounted on a stand, or as an auxiliary unit in connection with a large installation. It is characterized by powerful wash and rinse sprays located above and below the rack and with "dwell" control for prolonged washing for stubborn soil. Automatic controls regulate the timing of each rack on both wash and rinse sprays.

Cream of Wheat à la mode is the newest promotion idea put forth to encourage summer consumption of this hot cereal. When ice cream is placed on hot Cream of Wheat, it melts, providing both the sugar and cream usually used with cereal, plus an extra fillip in flavor. No special flavor of ice cream is recommended, since an almost limitless variety may be used. Some of the ideas put forth as suitable occasions for Cream of Wheat à la mode include: help-yourself brunch; birthday breakfast, teen-age slumber party, neighborhood get-together, late-night snack, and toddler's supper, and everyday breakfasts.

A new publication of the *National Association of Margarine Manufacturers* is "Fats and Your Diet." This attractively illustrated booklet, printed appropriately in yellow and brown, considers: "what fats are"; "kinds of fats"; "what fats do in cooking"; "food value of fats"; and "margarine as a food fat."

The Cleveland Range Company has available a new steam cooker in which side-by-side rather than front-to-back placement of cafeteria pans is a feature. It is designed to accommodate two standard 12 by 20 in. pans on each of six steaming shelves, thus making the total capacity twelve standard pans for a two-compartment steamer. The new steamer also readily accommodates standard 12 by 20 in. pans of 4, 6, or 8 in. depths and 18 by 26 in. flat bake trays, thus making it suitable for quantity portion warming. The new "side-by-side" steamer is available for gas, electric, or direct-connected steam operation. Two-, three-, and four-compartment units are available.

Edalene Stohr has been appointed Director of Home Economics for *American Can Company*. Miss Stohr was formerly Associate Food Editor of the *Woman's Home Companion*.

A new "animal and alphabet" children's ensemble of tray cover and napkins has been designed by *Aatell & Jones* for use with pediatric patients. Tricky and humorous drawings of animals, each playing with the letter with which its name begins, have been worked out to incite children's interest and cooperation in eating. The set is in color—red and black.

New... CELLU

LOW SODIUM NON-FAT

DRY MILK SOLIDS

A specially processed dried skim milk with reduced sodium content, intended for the production of low-sodium foods. The process used reduces the sodium content of skim milk as much as 95% ...(30 milligrams of sodium in 100 grams of powder)... when reconstituted, the sodium content is approximately 1/10th the amount of average fluid milk. Reliquefies readily... tastes like ordinary skim milk... economical to use as an ingredient in palatable beverages, soups, custards and miscellaneous other food items for sodium restricted diets. Packed in 12 oz. glass jar. Makes one gal. or use 3 level Tbsp. per cup.

Send for complete listings of over 300 Cellu dietary foods.

CELLU® *flavorful* DIET FOODS

CHICAGO DIETETIC SUPPLY HOUSE, INC.

Dept. 12-F, Chicago 12, Illinois

PIONEERS IN DIETARY FOODS SINCE 1921